

# State of the union

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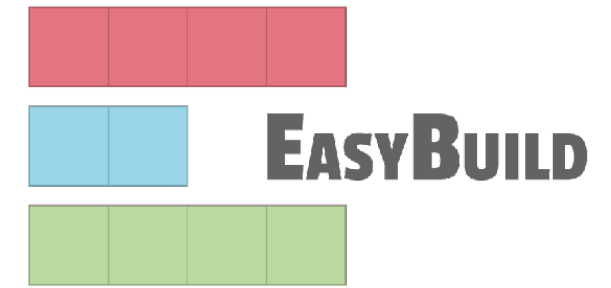
*kenneth.hoste@ugent.be*

**11th EasyBuild User Meeting**

*21 April 2026 - Guimarães (Portugal)*

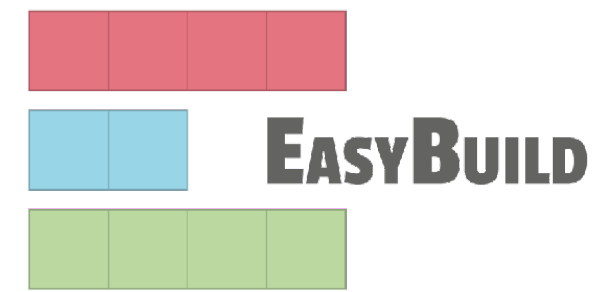
*<https://easybuild.io/eum26>*

# Agenda

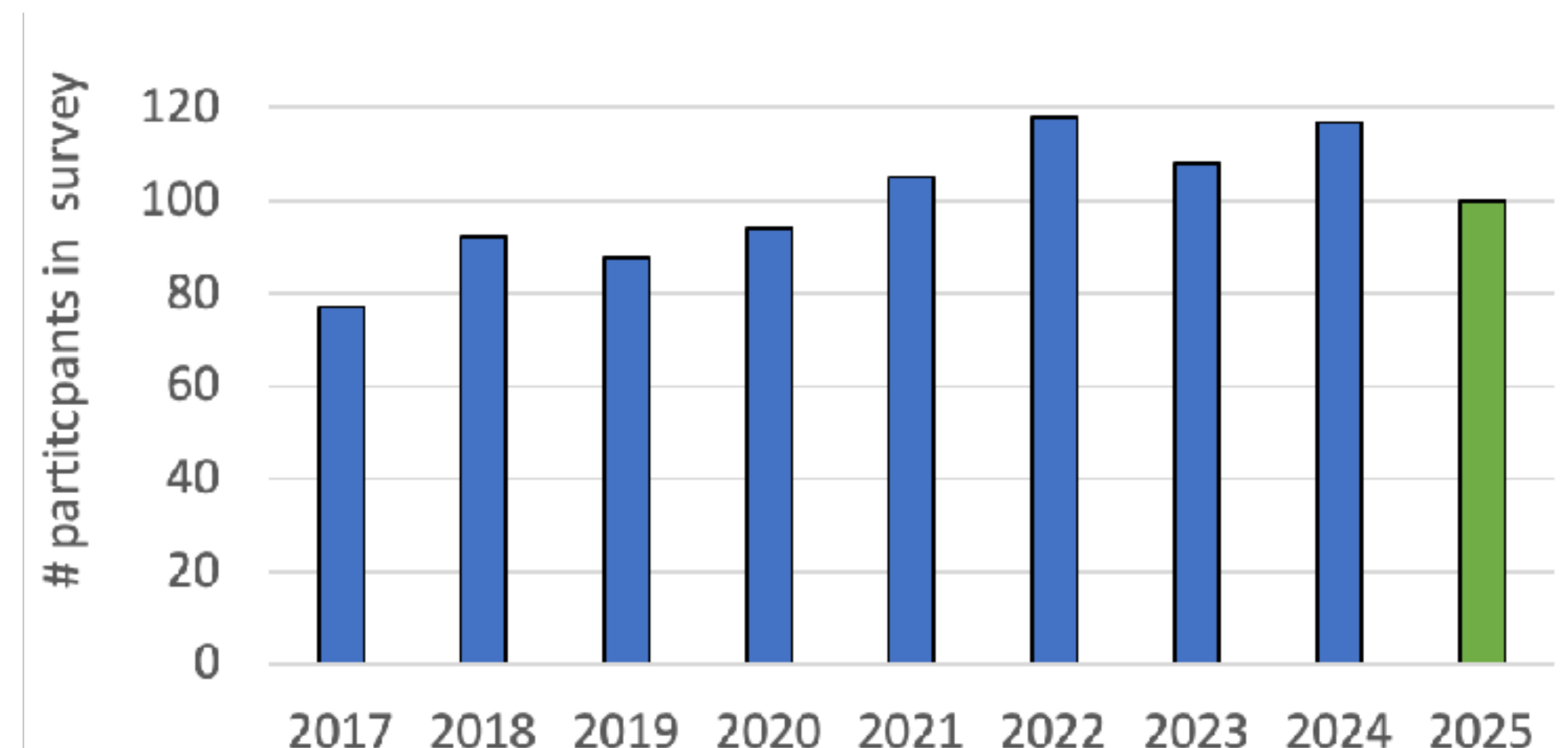


- Results (highlights) of 9th EasyBuild User Survey
- Status overview of EasyBuild (w.r.t. contributions, etc.)
- Recent developments in EasyBuild
- Current challenges, like impact of LLMs
- Quick outlook to the future

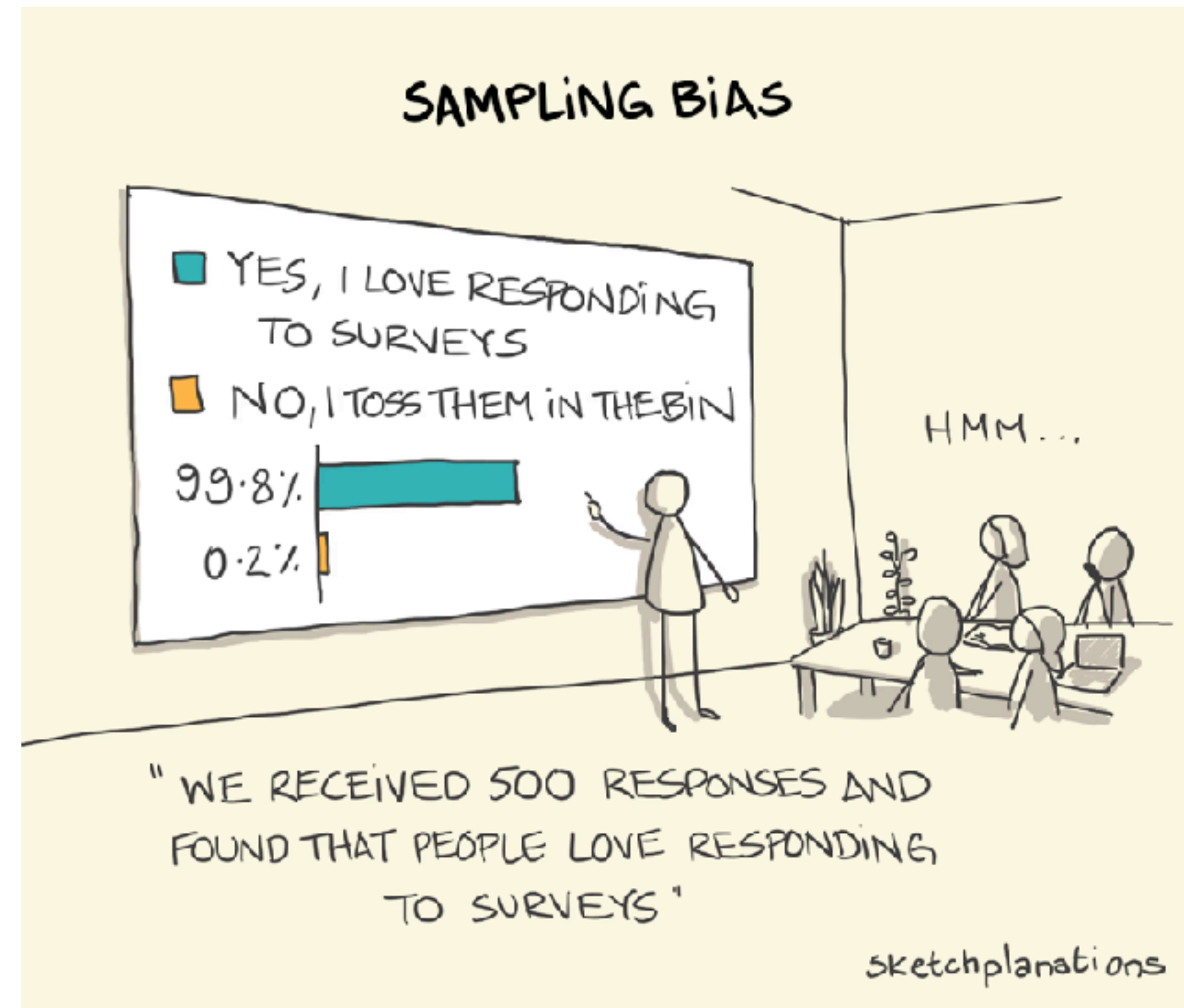
# EasyBuild User Survey



- Anonymous survey, **9th edition** (was held 13 March - 3 April 2026)
- Feedback from + insight into EasyBuild community
- 57 questions (5 more than last survey), covers wide variety of aspects
- 100 people participated (a bit less than previous years)
- Full survey results (hopefully) available soon at [docs.easybuild.io/user-survey](https://docs.easybuild.io/user-survey) (help is welcome...)
- Highlights are covered in this talk
- 9th survey: allows for observing evolution and trends...
- Special edition next year? (ideas are welcome)



# EasyBuild User Survey

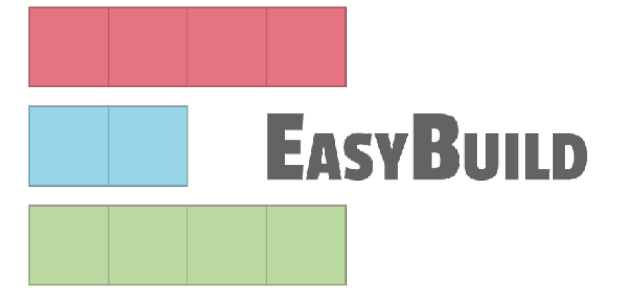


Survey results are *assumed* to give a representative view on EasyBuild community,  
but results should be interpreted with a grain of salt...

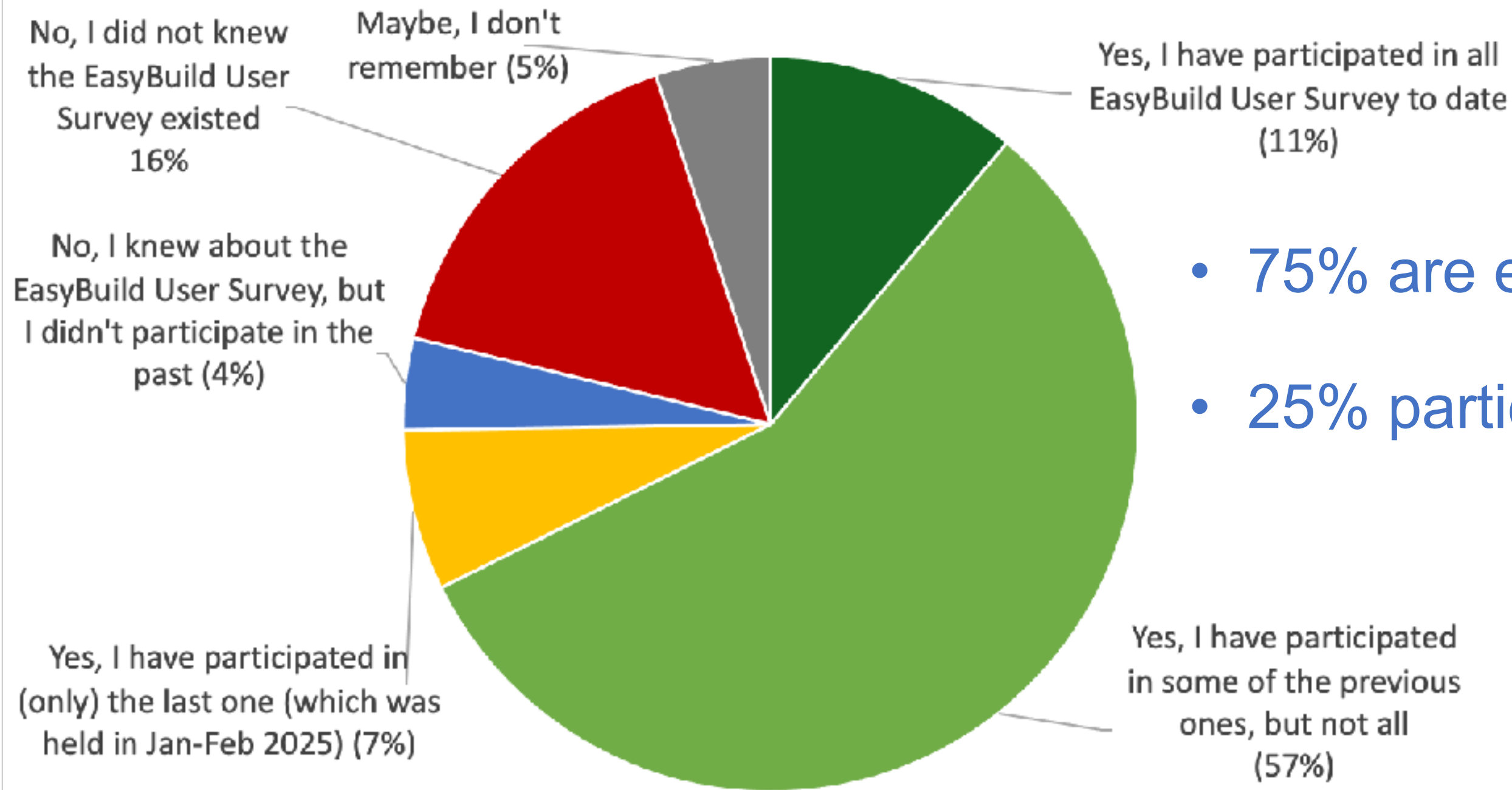
100 participants is **less than 10%** of EasyBuild community

(based on members of EasyBuild Slack)

# EasyBuild User Survey

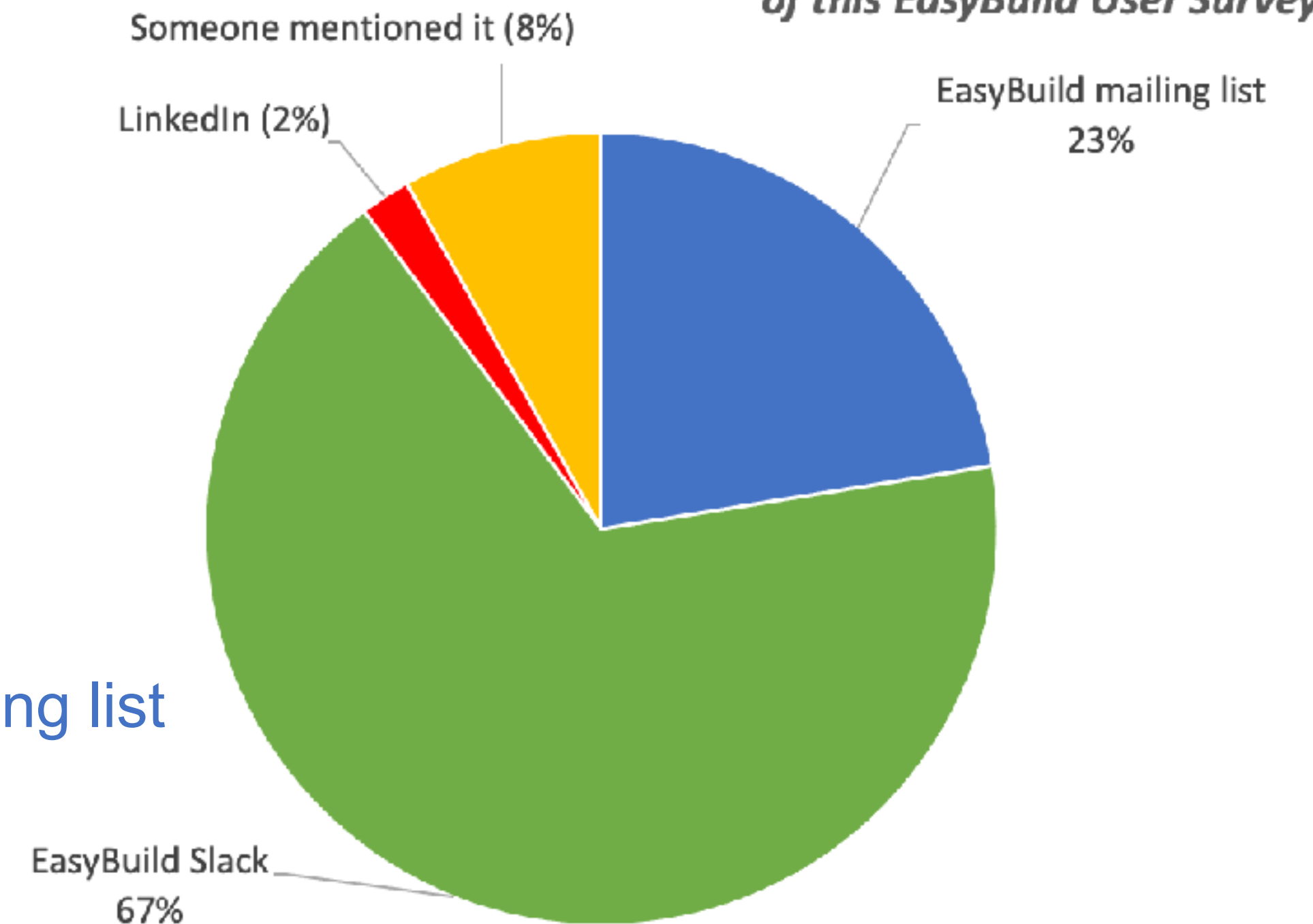


**Have you participated in the EasyBuild User Survey before?**



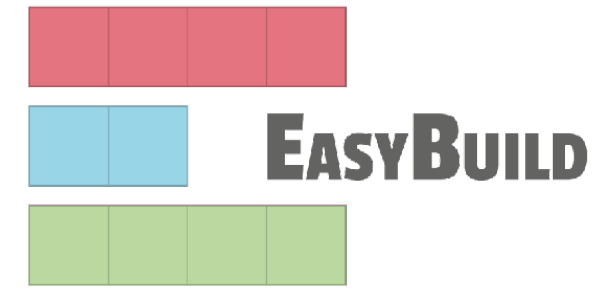
- 75% are experienced survey participants
- 25% participate for the first time

**Via which channel did you become aware of this EasyBuild User Survey?**



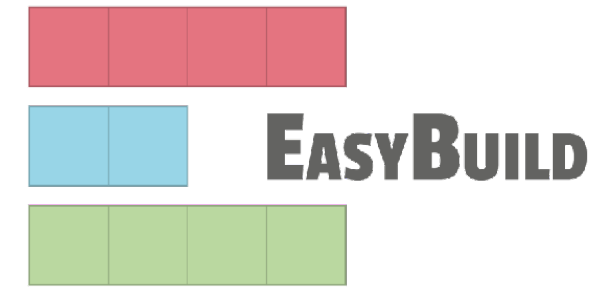
- Slack is by far the largest “source” for survey participants with 67%
- 23% became aware via EasyBuild mailing list

# Community insights through user survey



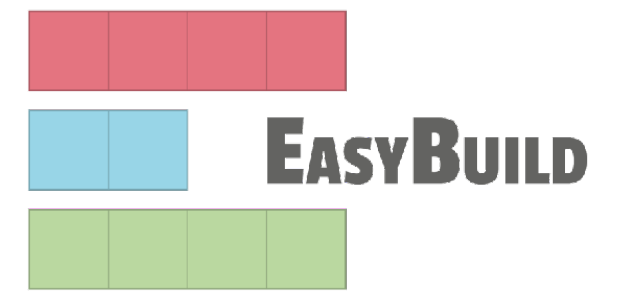
- Vast majority of EasyBuild community still is **sysadmin** (~40%) or **user support** (~30%)
  - Balance is tipping more towards user support (25% → 30%) vs sysadmin (46% → 40%) ?
- Geographic distribution is stable: **~85% is European**, North American minority of ~11%
- **Large mix in terms of experience** with EasyBuild, ~48% has 5+ years of experience
  - 10+ years: 15% | 5-10y: 33% | 2-5y: 33% | 1-2y: 12% | 6m-1y: 3% | < 6m: 3%
  - Shift towards ~~older~~ more experienced EasyBuilders, shrinking influx of new blood?
- Word-of-mouth remains main way of how people learn about EasyBuild
  - ~38% reported that “EasyBuild was already in use” (up from 27-32% in 2022-2024)

# Mix of new & experienced EasyBuilders

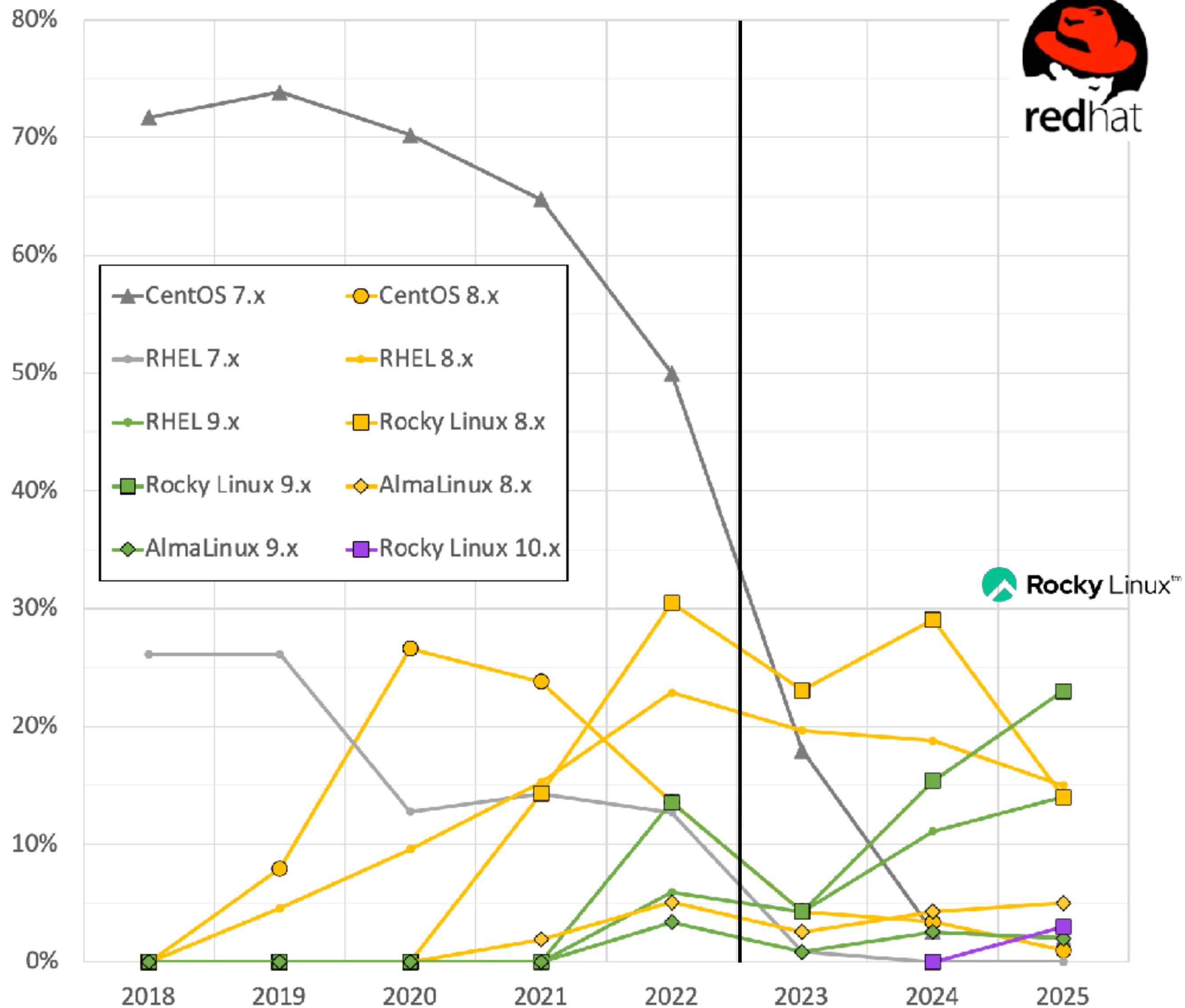


- **We should be aware of people new to EasyBuild** (or even installing software on HPC systems)
- They can learn a lot from experienced EasyBuild users, **but also the other way around!**
- We should try and look beyond their questions & feedback:  
**What can we do to further improve EasyBuild?**
- **Feedback by newcomers is very valuable**, experienced EasyBuilders are “blind” to certain things
- Influx of new people is partially fueled by EESSI & EuroHPC Federation Platform
- An up-to-date and in-depth tutorial on EasyBuild is probably helpful...

# Operating systems in EasyBuild community



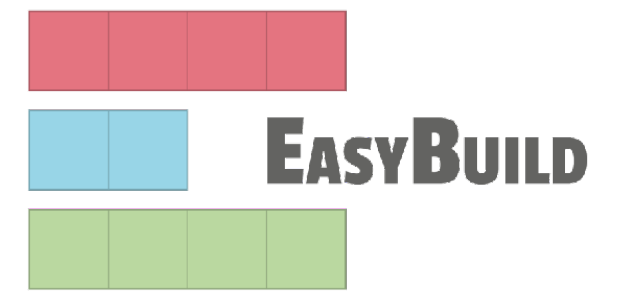
On which operating system(s) do you use EasyBuild?



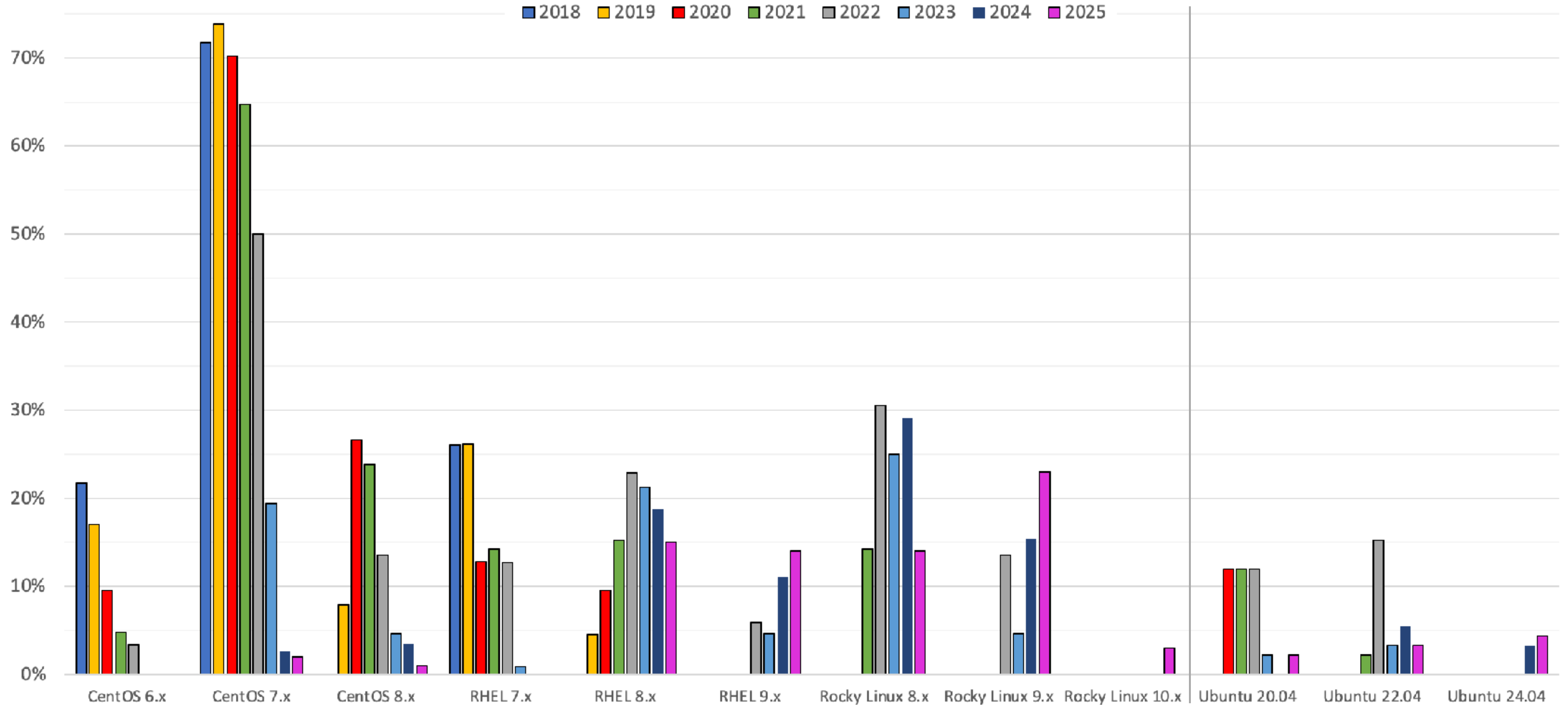
- Vast majority of EasyBuild community is using a RHEL-based OS (stable), rest is small minority (< 5%)
- CentOS 7 just doesn't want to die (EOL June 2024), ~18% in 2023, now still 2% ...
- RHEL8-based OS (yellow) in decline: RHEL8: 15%, Rocky Linux 8: 14%, AlmaLinux 8: 5%
- RHEL9-based OS (green) growing further: RHEL9: 14%, Rocky Linux 9: 23%, AlmaLinux 9: 2%
- RHEL10-based OS (purple) on the horizon: Rocky Linux 10.x pops up with 3%
- **In summary: mix of RHEL8 / RHEL9 / RHEL10 ...**

Note: since 7th survey (2023 results), you could only pick *\*one\** answer

# Operating systems in EasyBuild community



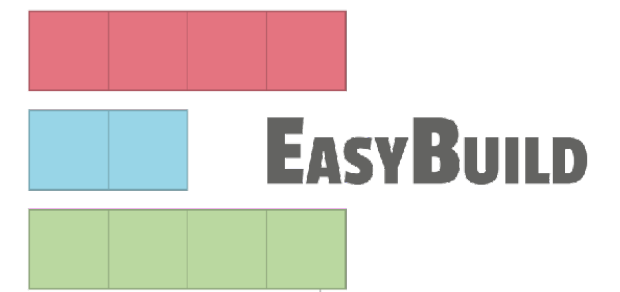
*On which operating system(s) do you use EasyBuild?*



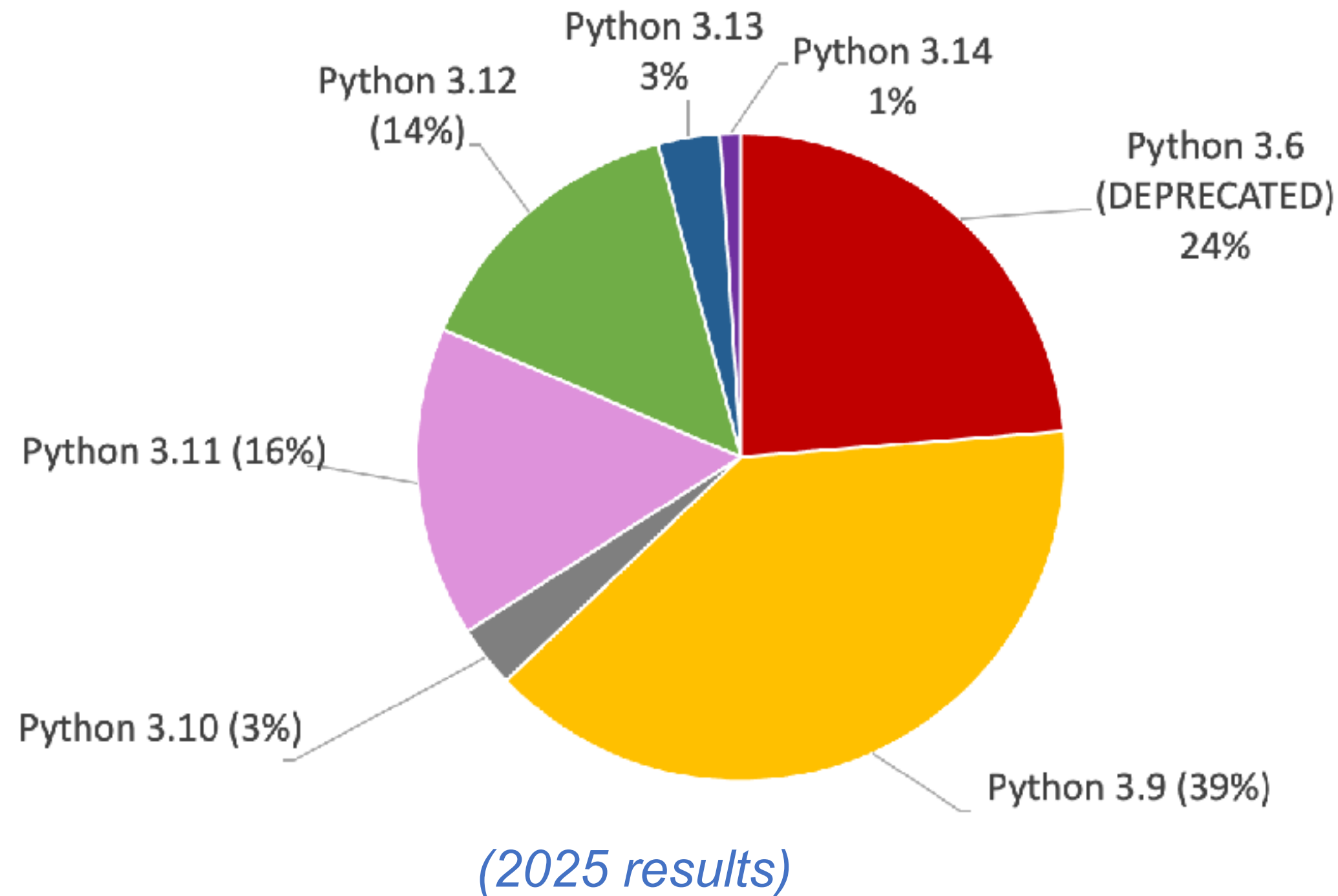
Non-RHEL based OSs are a minority in the EasyBuild community, only Ubuntu is also (sort of) on the radar



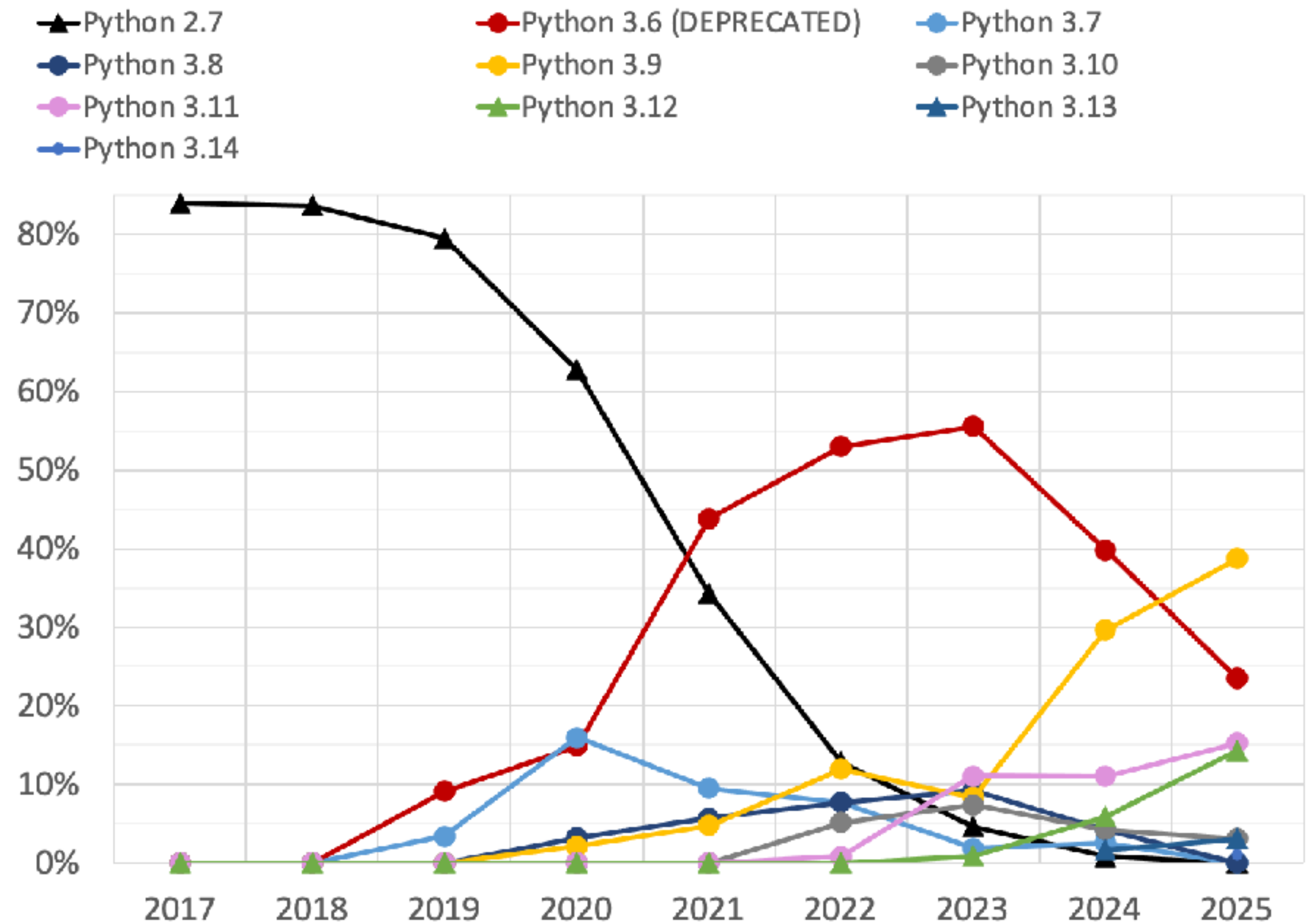
# Python versions used to run EasyBuild



Which Python version do you usually use to run EasyBuild?



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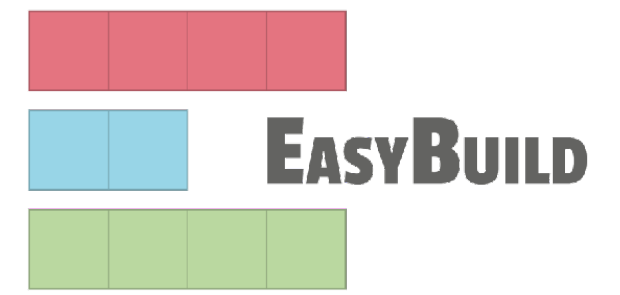


Running EasyBuild on top of Python < 3.9 is deprecated since EasyBuild v5.2.0, yet ~24% is still using Python 3.6...

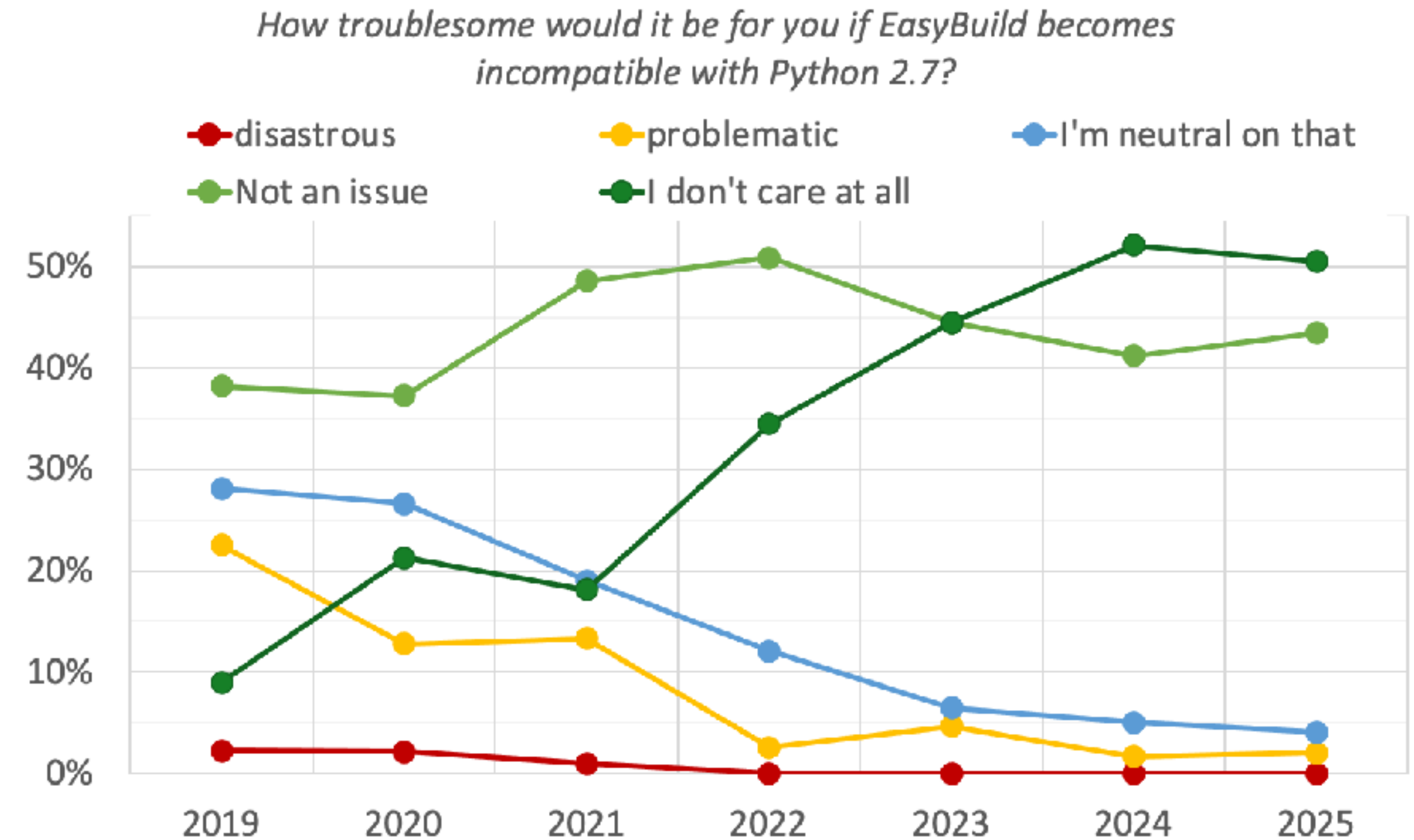
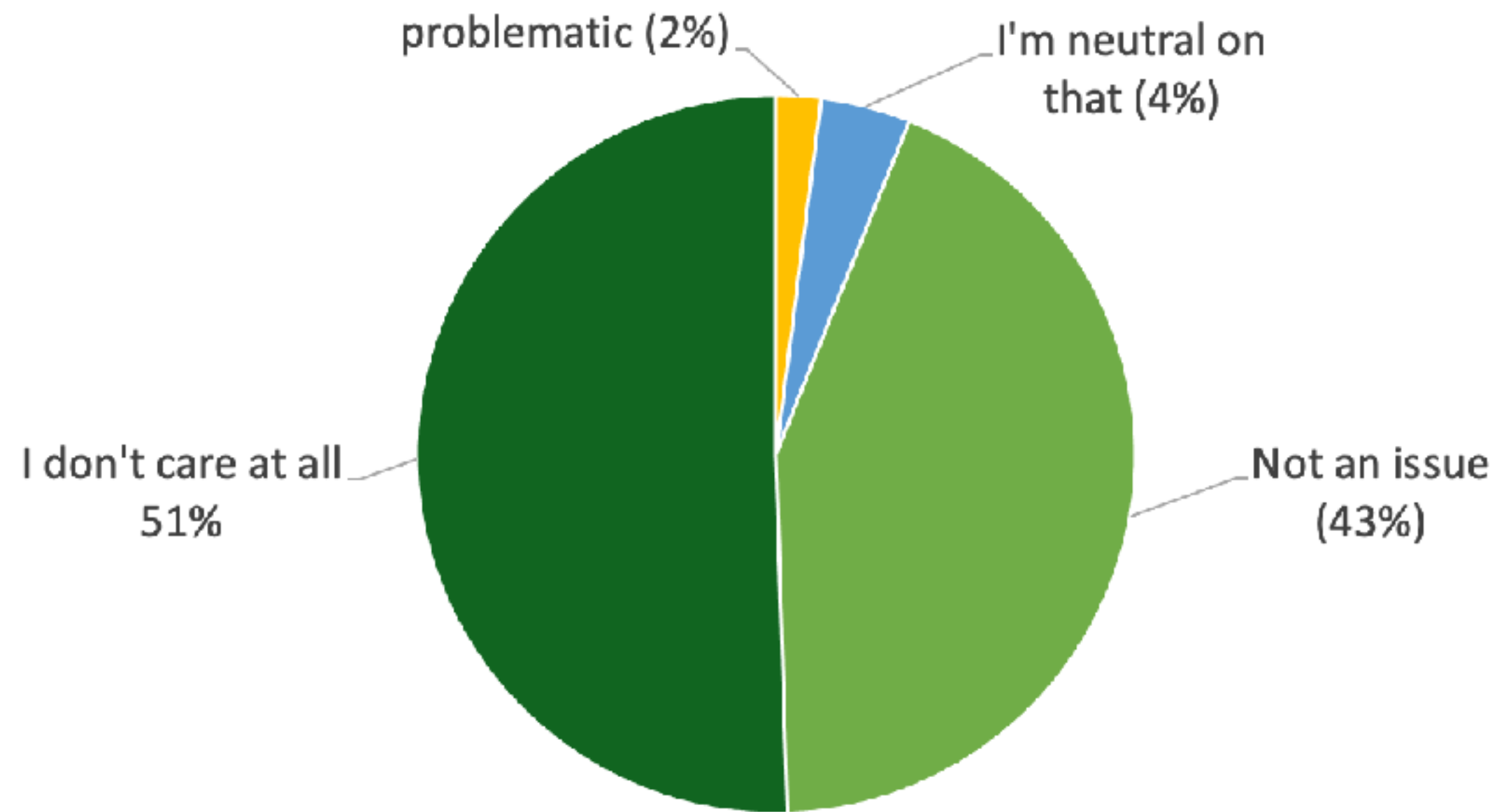
Deprecating support for Python < 3.12 is being considered for EasyBuild 6.0 (ETA spring 2027)

Significant splintering across various Python 3 versions is a challenge going forward...

# Community is fine with getting rid of Python 2.7



How troublesome would it be if / has it been that EasyBuild became incompatible with Python 2.7?

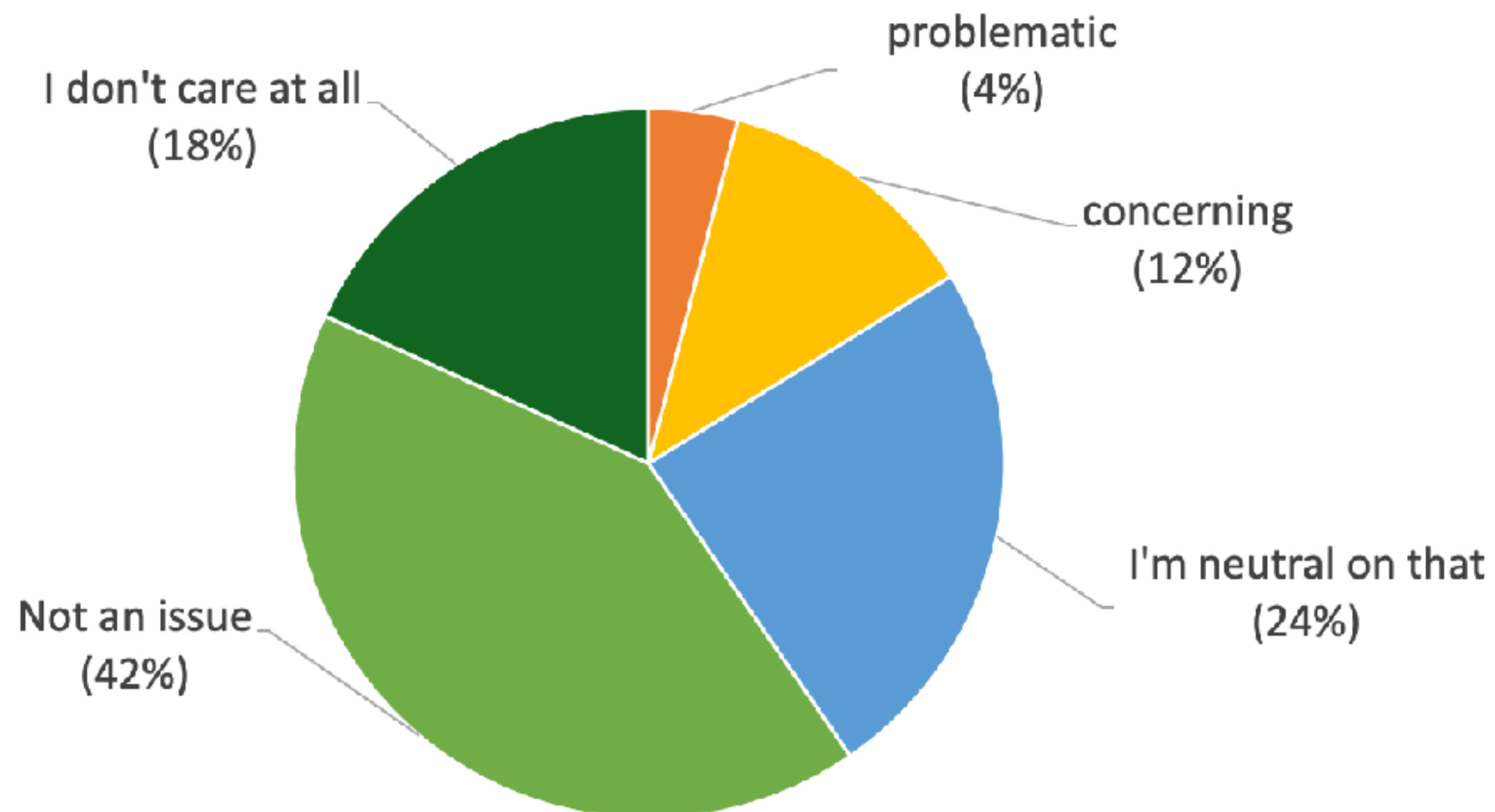


Support for running on top of Python 2.7 was deprecated since EasyBuild v4.7.0 (Jan'23), and was *removed* in EasyBuild v5.0.0 (March'25), Python 3.6+ is required now

98% of EasyBuild community is totally fine with that, only 2% indicated it was “problematic”



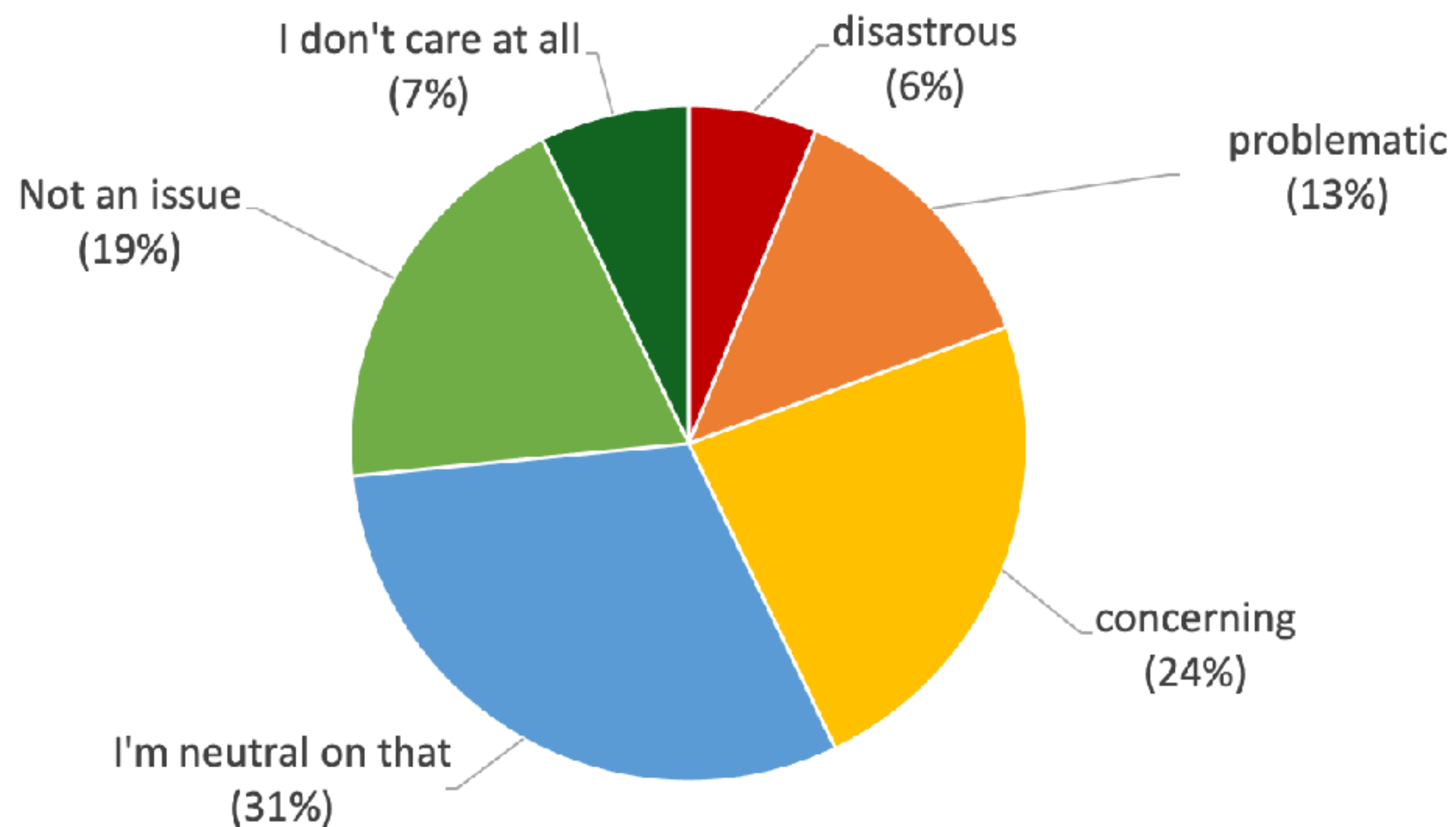
How troublesome would it be for you if EasyBuild became incompatible with **Python versions older than 3.9**?  
(new question)



Large majority (84%) would already be OK with dropping support for Python < 3.9 (already deprecated)

Running EasyBuild on top of Python versions < 3.9  
will probably be removed in EasyBuild 6.0 (ETA spring 2027)

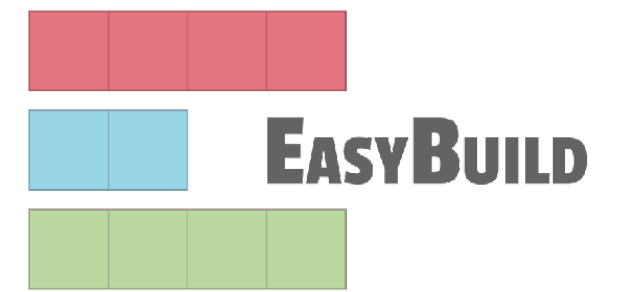
How troublesome would it be for you if EasyBuild became incompatible with **Python versions older than 3.12?**  
(new question)



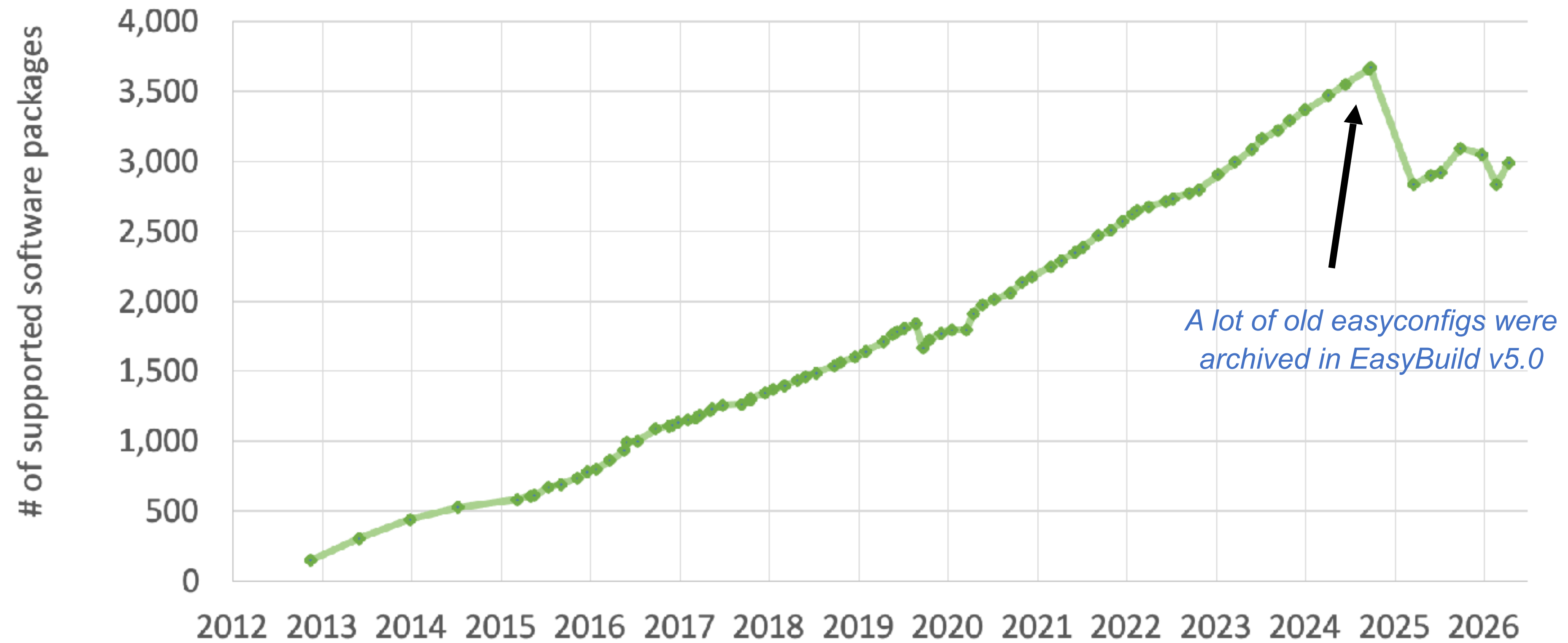
Requiring Python  $\geq 3.12$  would be too disruptive currently, although  $\sim 57\%$  would be OK with it

Deprecating support for Python < 3.12 is being considered for EasyBuild 6.0...

# Supported software



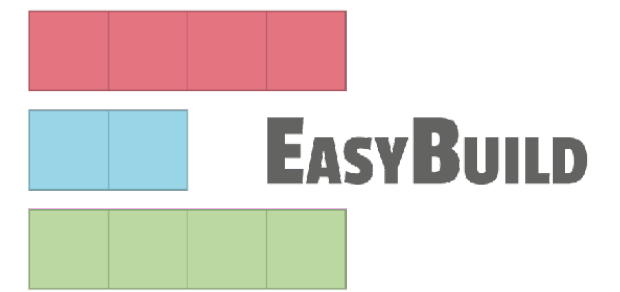
*Evolution of number of supported software packages in EasyBuild (without extensions)*



**Close to 3,000 different software projects supported by EasyBuild v5.3.0 (plus 3,000+ extensions)**

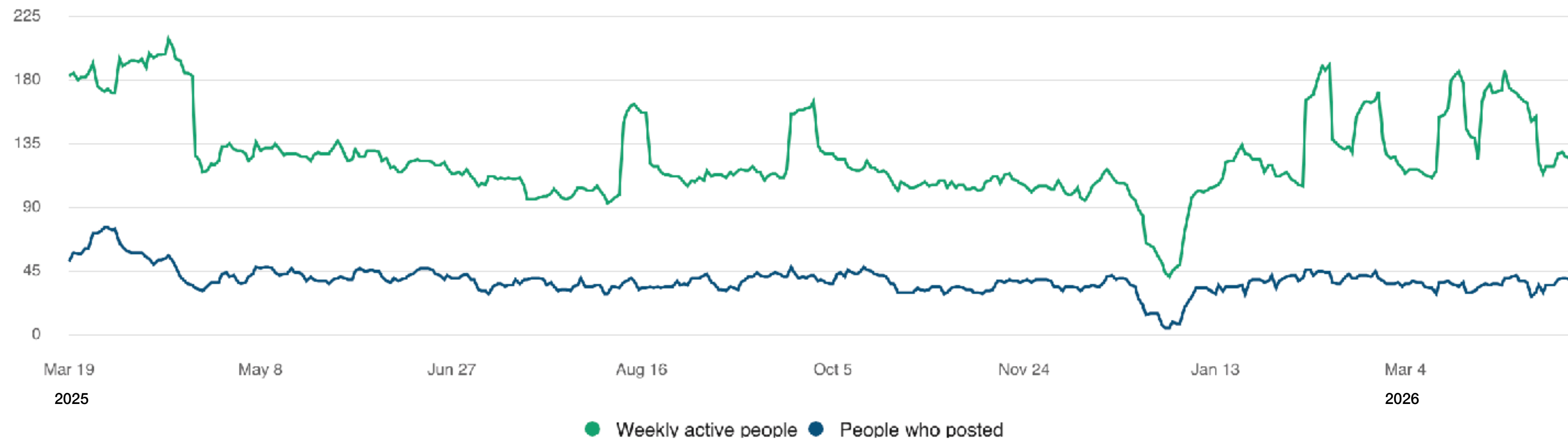
Frequent (small) declines since 2024 due to archiving of easyconfigs using unsupported toolchains...

# EasyBuild Slack

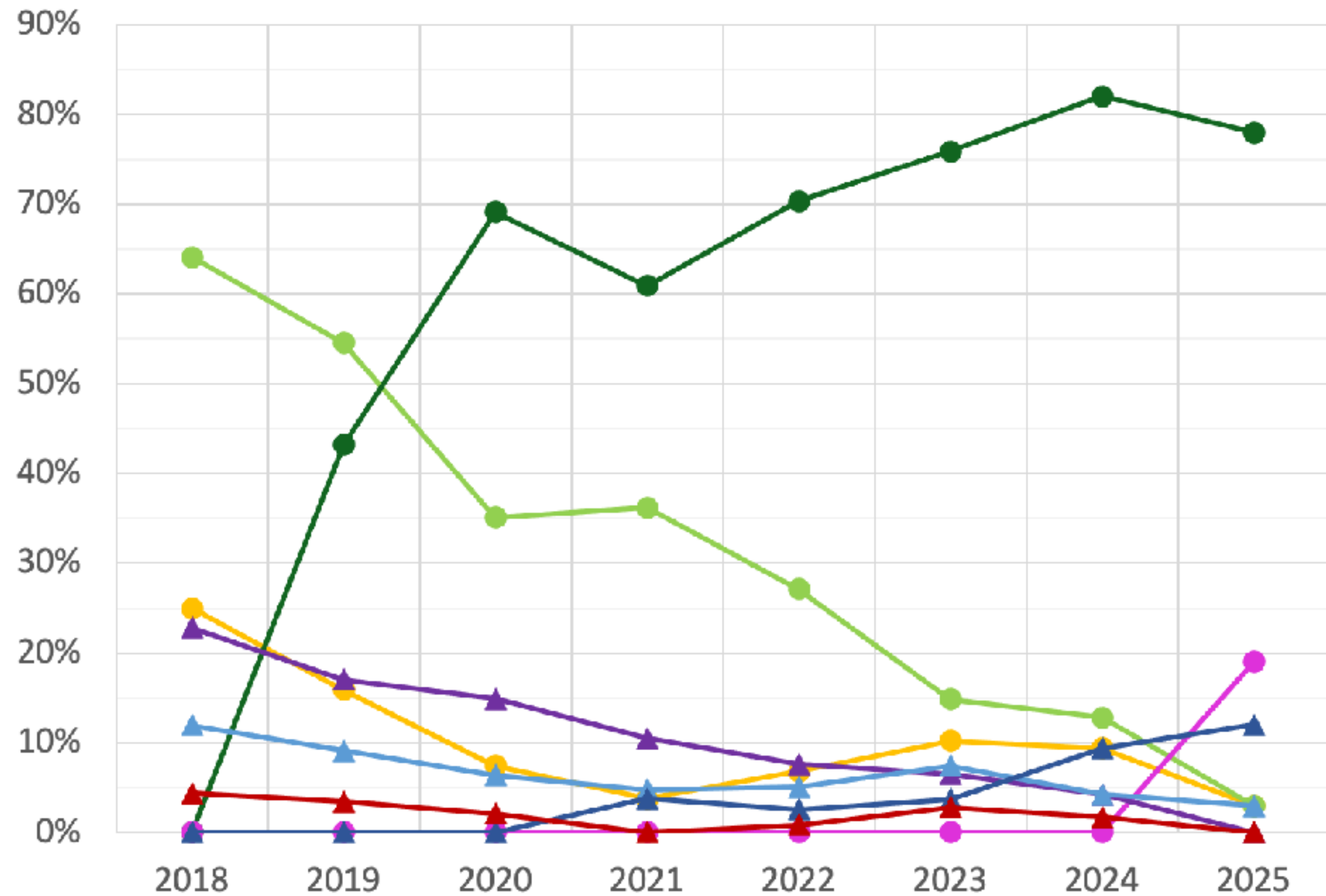
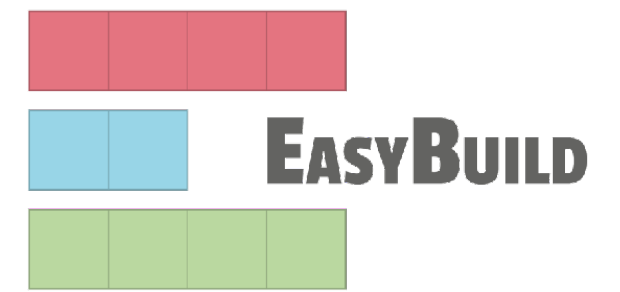


- EasyBuild Slack has almost replaced EasyBuild mailing list as main community channel
- **1,000+ (1,115) members on Slack channel now**, steady increase of 100-150 per year since 2020
- 100-200 people active per week, ~50 people posting per week
- Slack has quickly become the central hub for discussing EasyBuild & getting help

**Join EasyBuild Slack via <https://easybuild.io/join-slack> !**

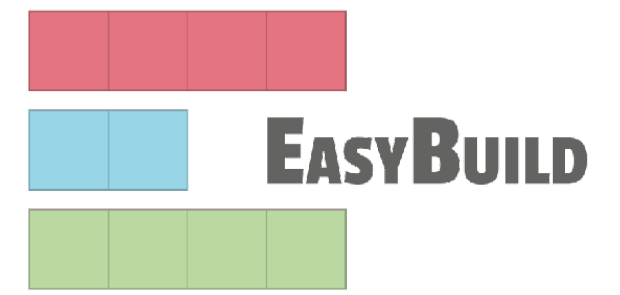


# Lmod + Environment Modules

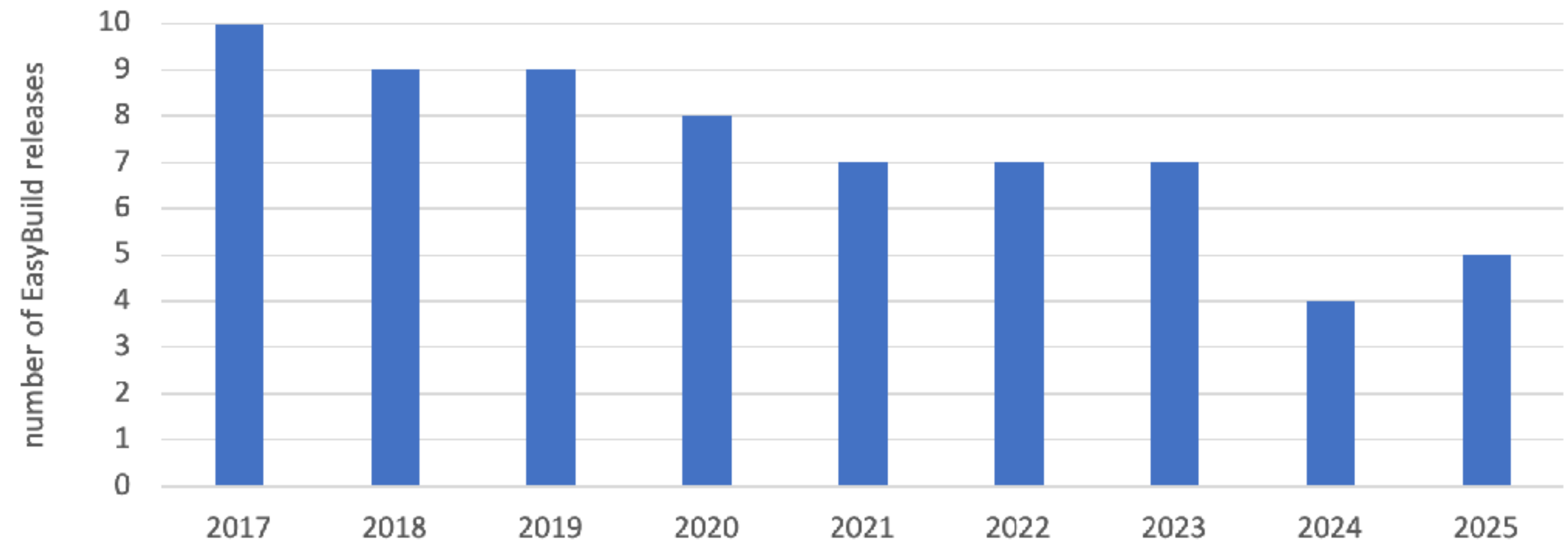
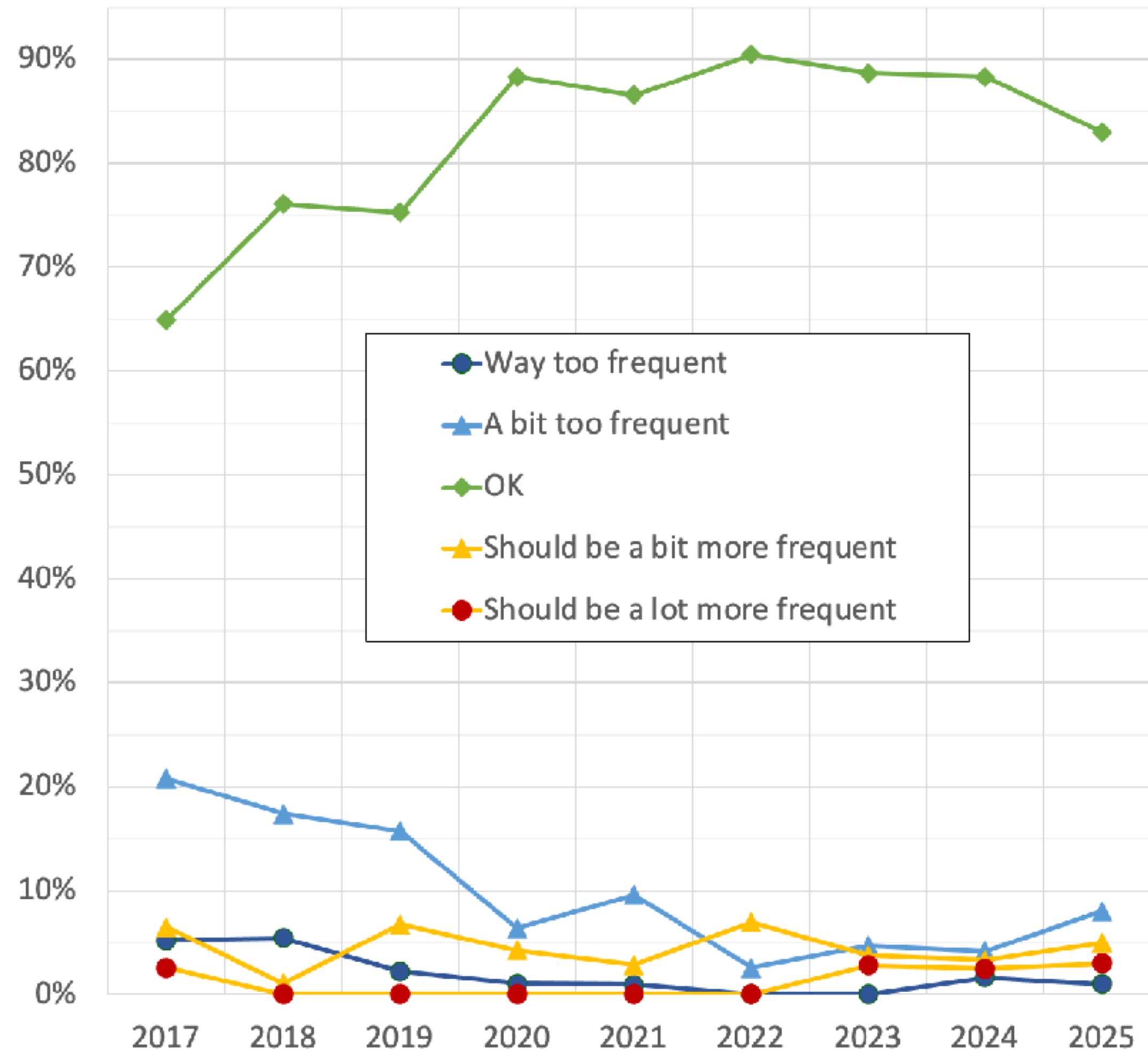


- Lmod remains most popular modules tool (by far)
- ~78% is using Lmod 8.x
- ~19% is already using Lmod 9.x
- ~3% is still using Lmod 7.x, likewise for Lmod 6.x (!)
  - Partially due to outdated Lmod package in Debian/Ubuntu
- **Lmod 6 + 7 are no longer supported by EasyBuild 5.0 !**
- Tcl-based Environment Modules 5.x is small (but growing) minority, version 5.x now used by ~12%

# EasyBuild releases



*How do you like the frequency of EasyBuild releases?*

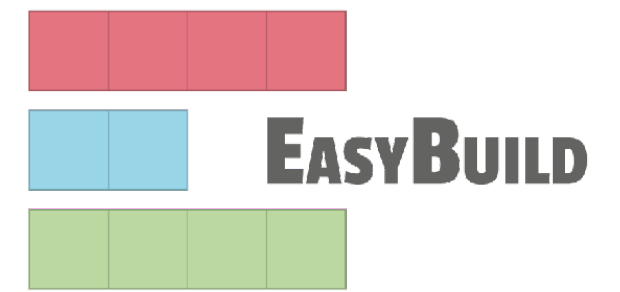


Fewer EasyBuild releases in 2024-2025 due to effort on EasyBuild v5.0

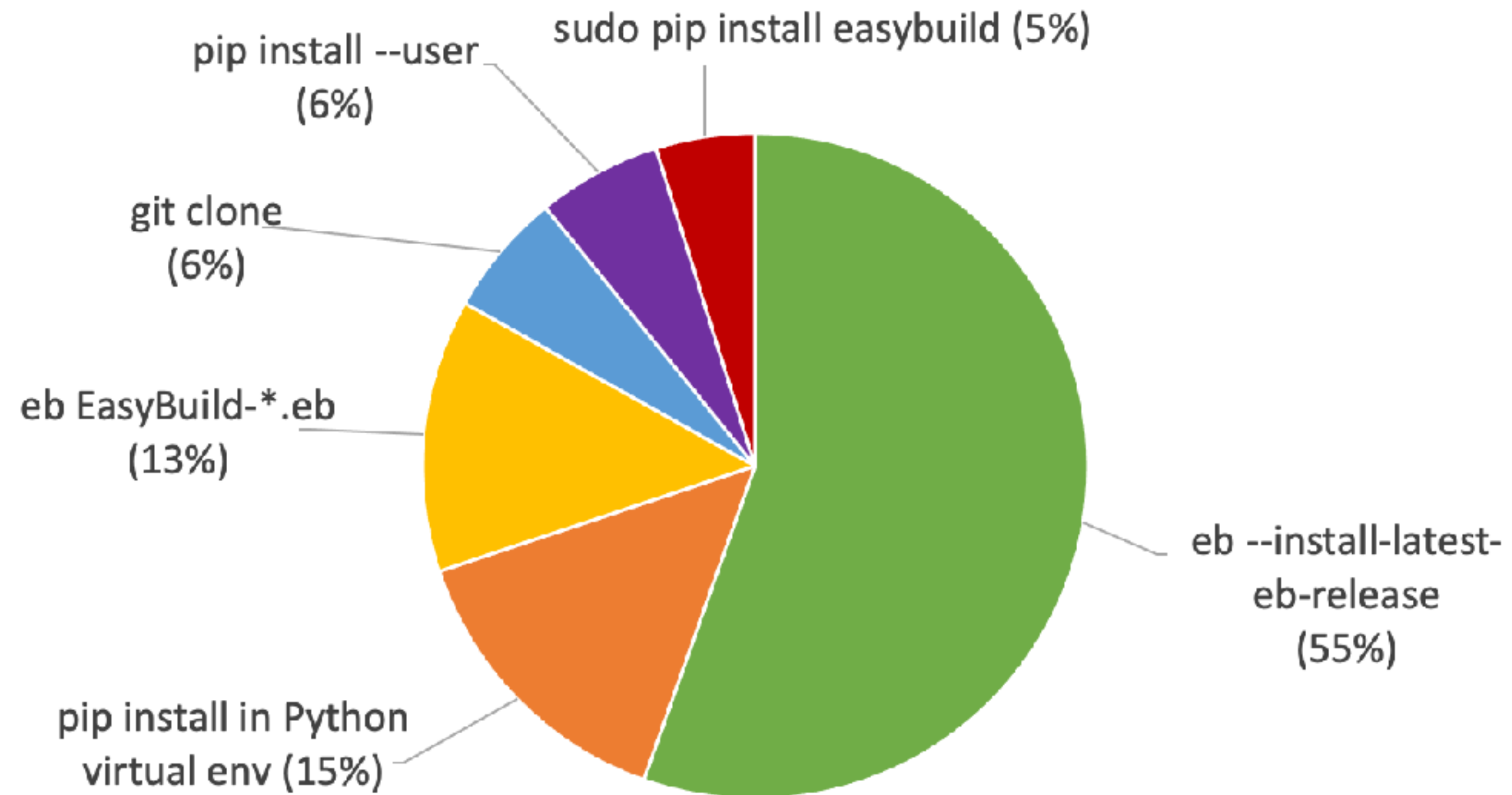
Expected to further increase again in 2026 and beyond

No strong negative response to fewer releases 👍

# Installing EasyBuild



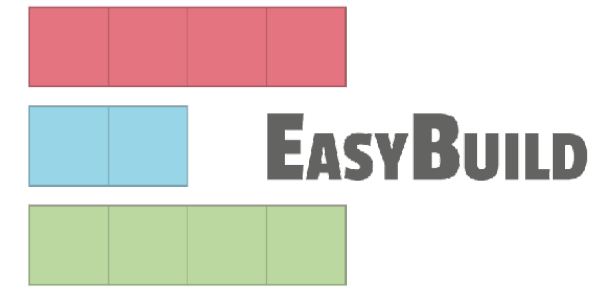
How do you usually install EasyBuild itself? (*new question*)



~68% uses EasyBuild to install EasyBuild, via `--install-latest-eb-release` or using `easyconfig`


Others use `pip install` (26% in total), small minority uses `git clone` + setting `$PATH`, `$PYTHONPATH` (6%)

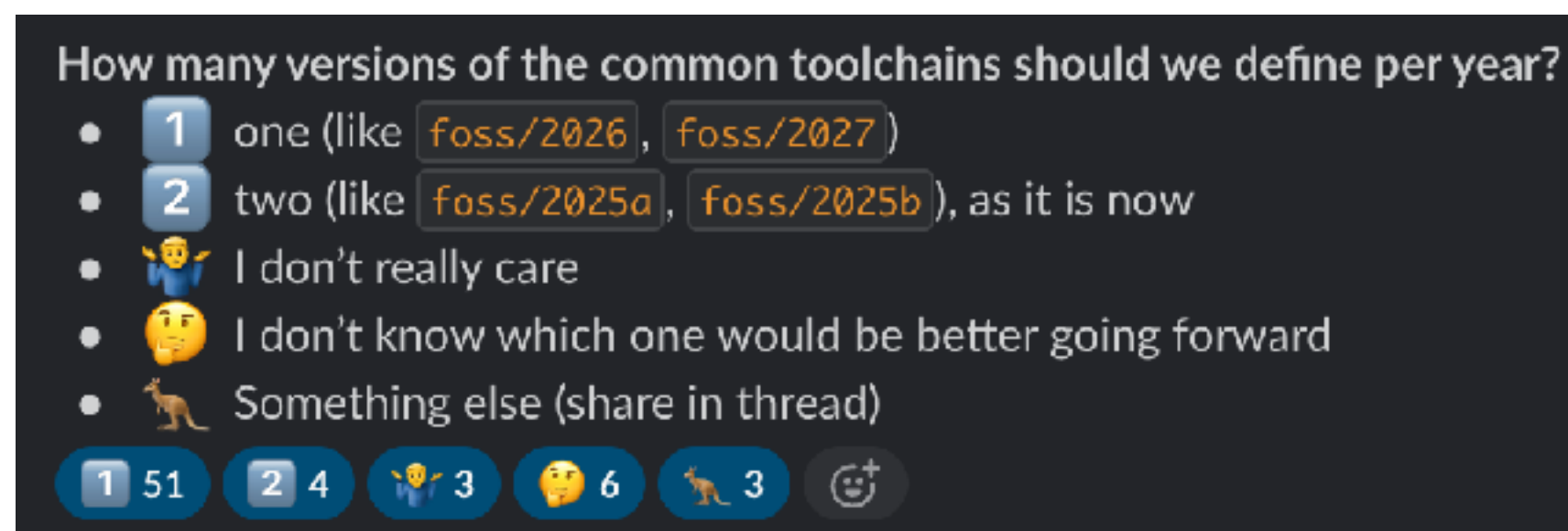
# Recent (major) developments in EasyBuild



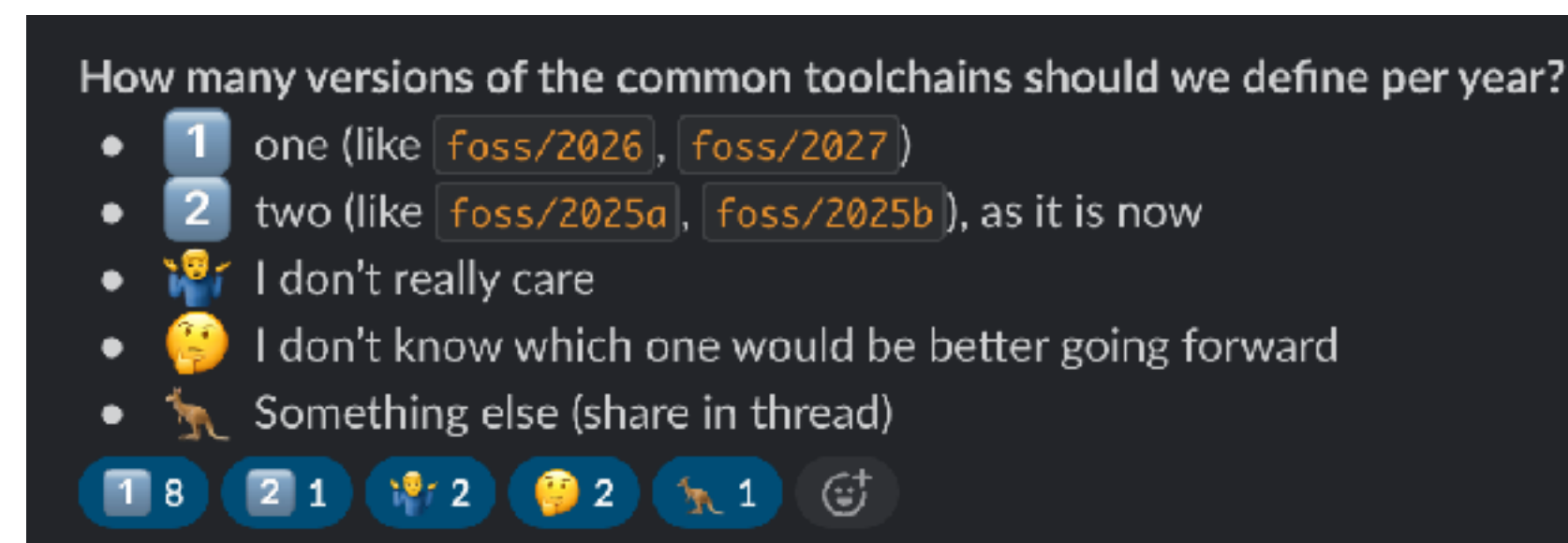
- CUDA sanity check
- Support for full NVHPC toolchain
- LLVM-based toolchains: `lfoss + lmpflf`  
along with subtoolchains: `llvm-compilers`, `lompi`, `lmpich`, `lfbf`
- Progress on ROCm support:
  - ROCm-based compiler toolchains: `rocm-compilers`, `rompi`, `rfbf`, `rfoss`
  - custom `easyblock` for ROCm-LLVM + `ROCmComponent` generic `easyblock`
- Enhanced integration with Rich for more colorful trace output
- Experimental integration with bubblewrap (`bwrap`)

# Common toolchains

- **Release schedule was changed from twice per year to ~once per year**, after consulting community
- Motivated: not really meeting previous cadence, relax pressure on easyconfig PRs, adoption in practice
- In practice we may have a new common toolchain version once every  $N < 12$  months
- Versioning scheme for common toolchains was changed to reflect this: 2025b  2026.1
- This will eventually also result in fewer supported common toolchain versions...  
(now 6 most recent versions are supported, two before that are deprecated)

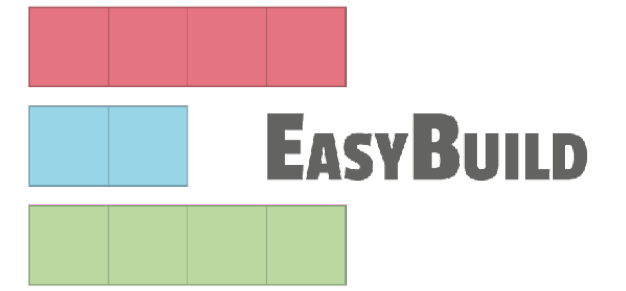


Community-wide poll (via # general in EasyBuild Slack)

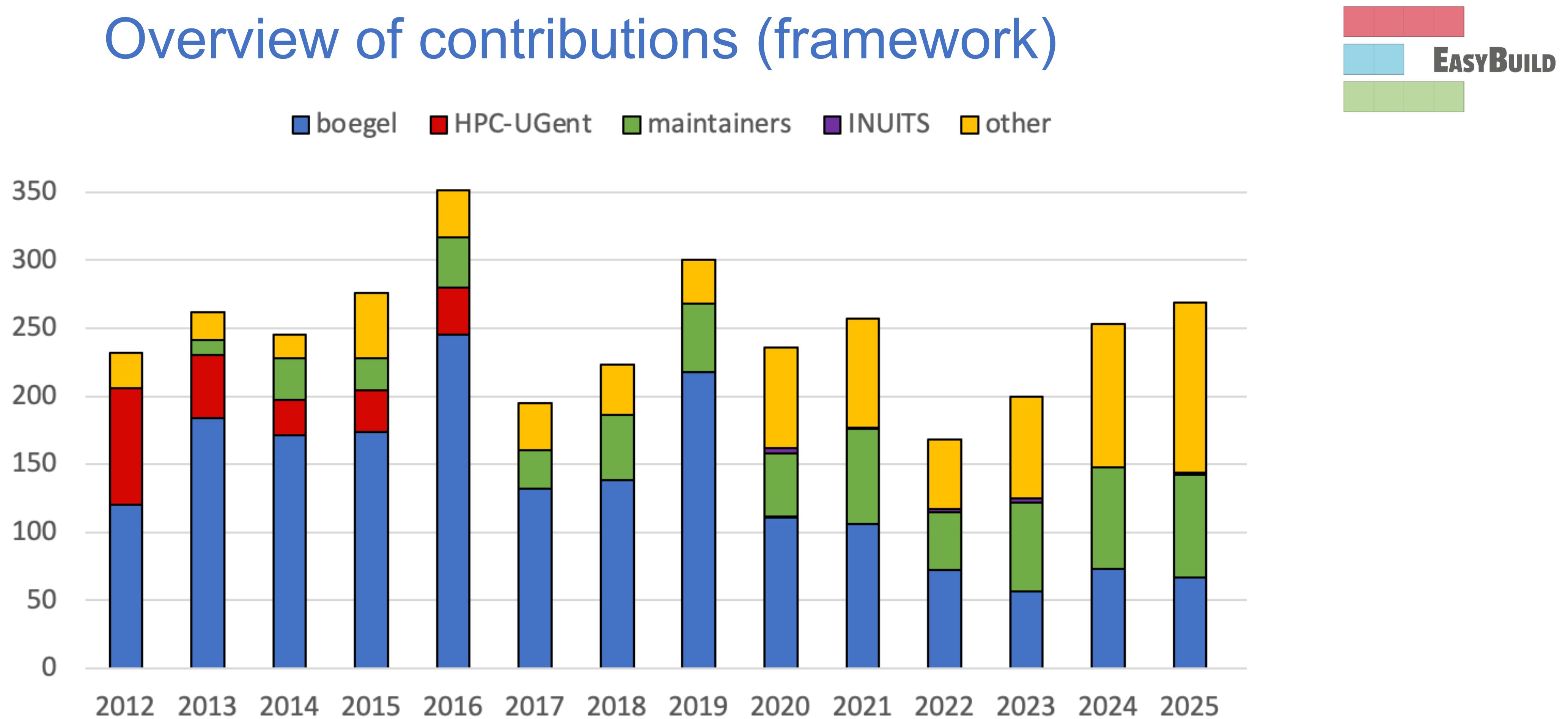


Poll among EasyBuild maintainers

# Contributors, contributors, contributors, ...

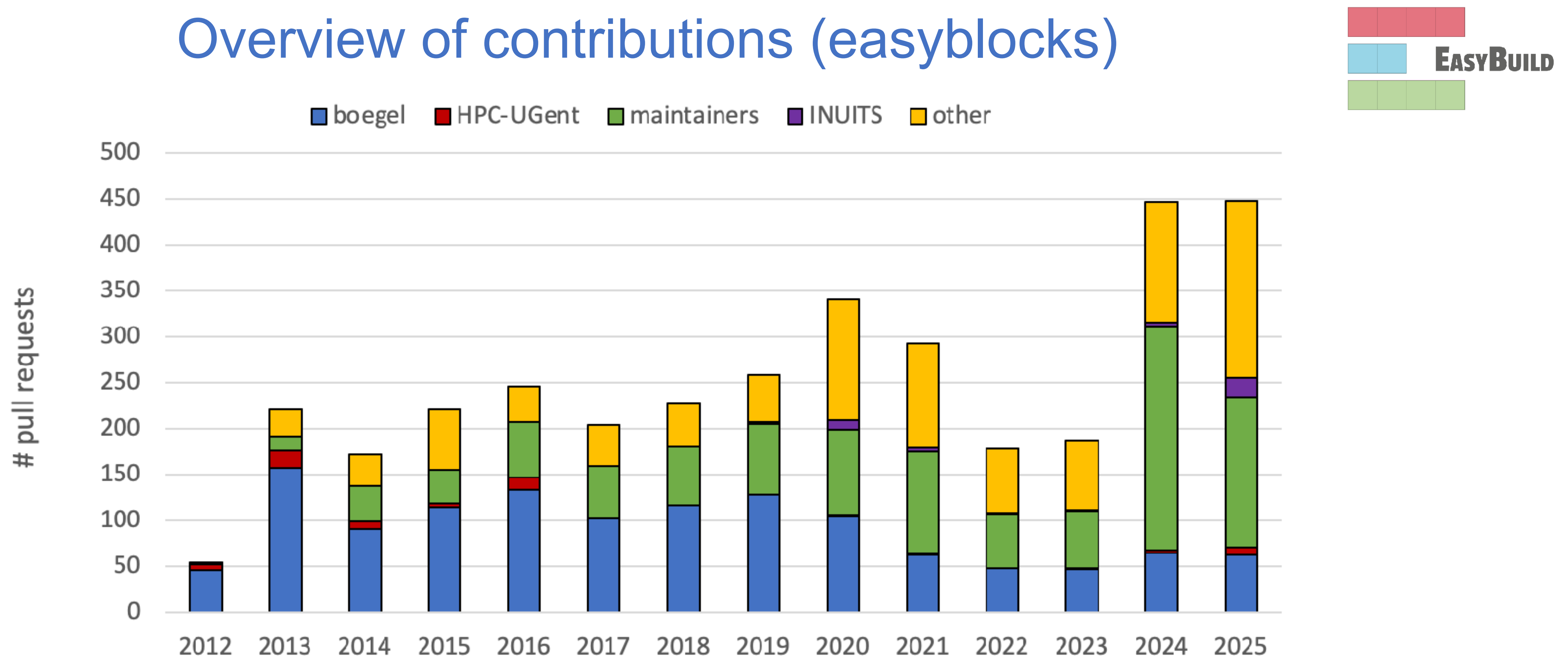


# Overview of contributions (framework)



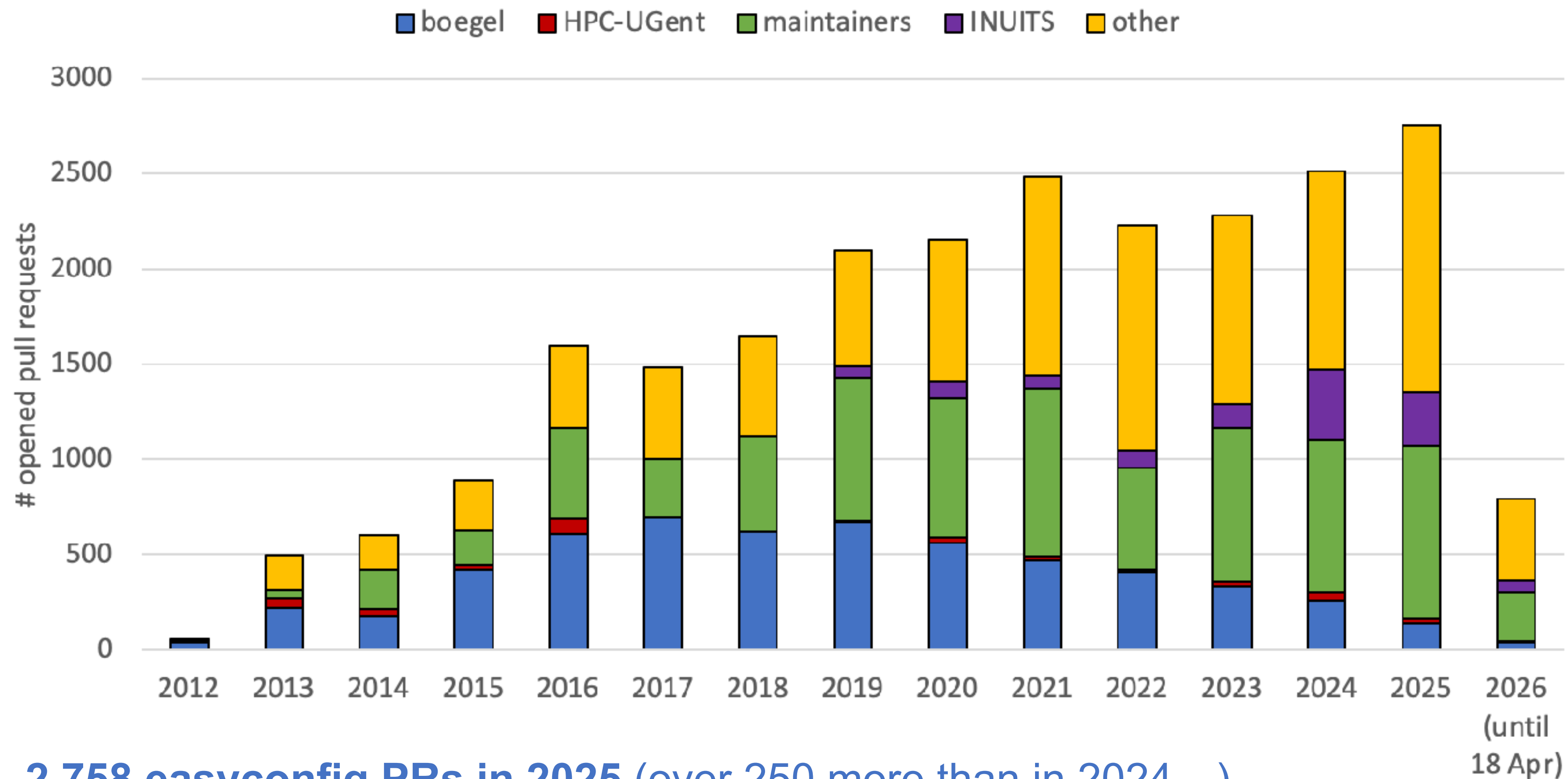
- Notable upward trend in # framework PRs since 2022 (partially due to effort towards EasyBuild v5)
- 69-74% of framework PRs in 2023-2025 by contributors outside HPC-UGent (was ~55% in 2022)
- Steady increase in framework PRs by non-maintainers (~46% in 2025, was ~30% in 2020-2022)

# Overview of contributions (easyblocks)



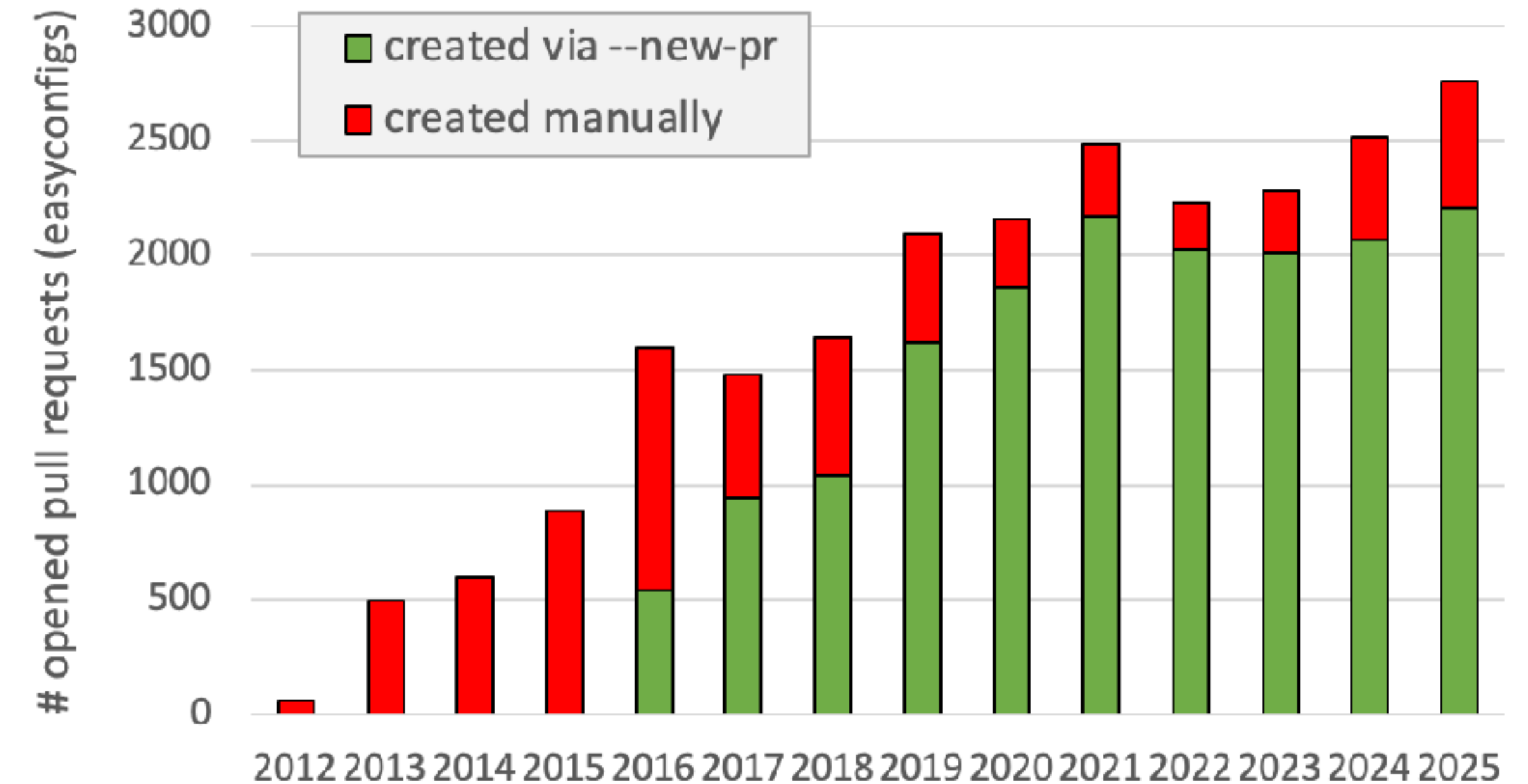
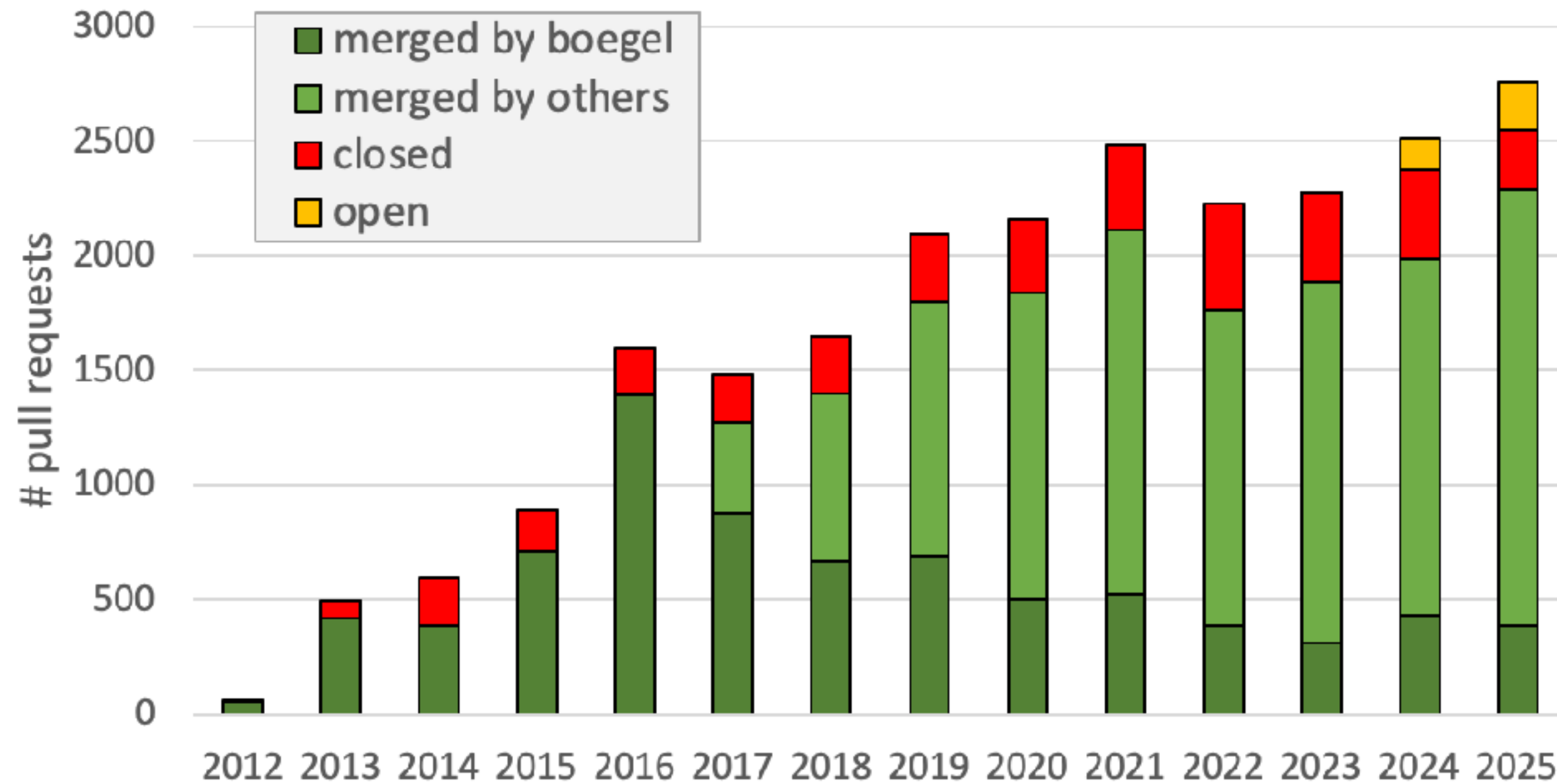
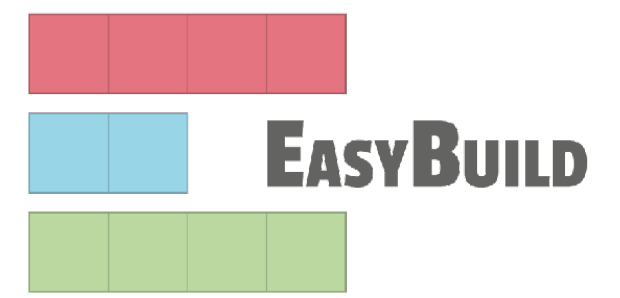
- Reduced activity in easyblocks in 2022-2023 (shift to using generic easyblocks?)
- > 400 PRs in 2024-2025, largely due to EasyBuild 5.0 porting effort (`run_shell_cmd`, ...)
- In 2024+2025: ~80% of PRs by contributors outside HPC-UGent
- Since 2020 over 30% of easyblock PRs were made by non-maintainers (peak in 2025: ~43%)

# Overview of contributions (easyconfigs)



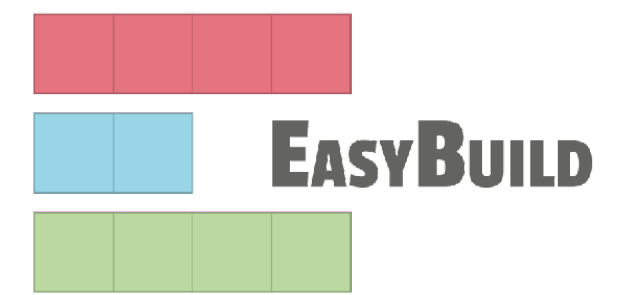
- **2,758 easyconfig PRs in 2025** (over 250 more than in 2024...)
- Continued shrinking ratio by boegel (< 5% in 2025, down from ~10% in 2024)
- ~10% by INUITS in 2025 (down from ~15% in 2024, up from 4-5% in 2022-2023)
- > 50% of PRs by non-maintainers

# Overview of contributions (easyconfigs)

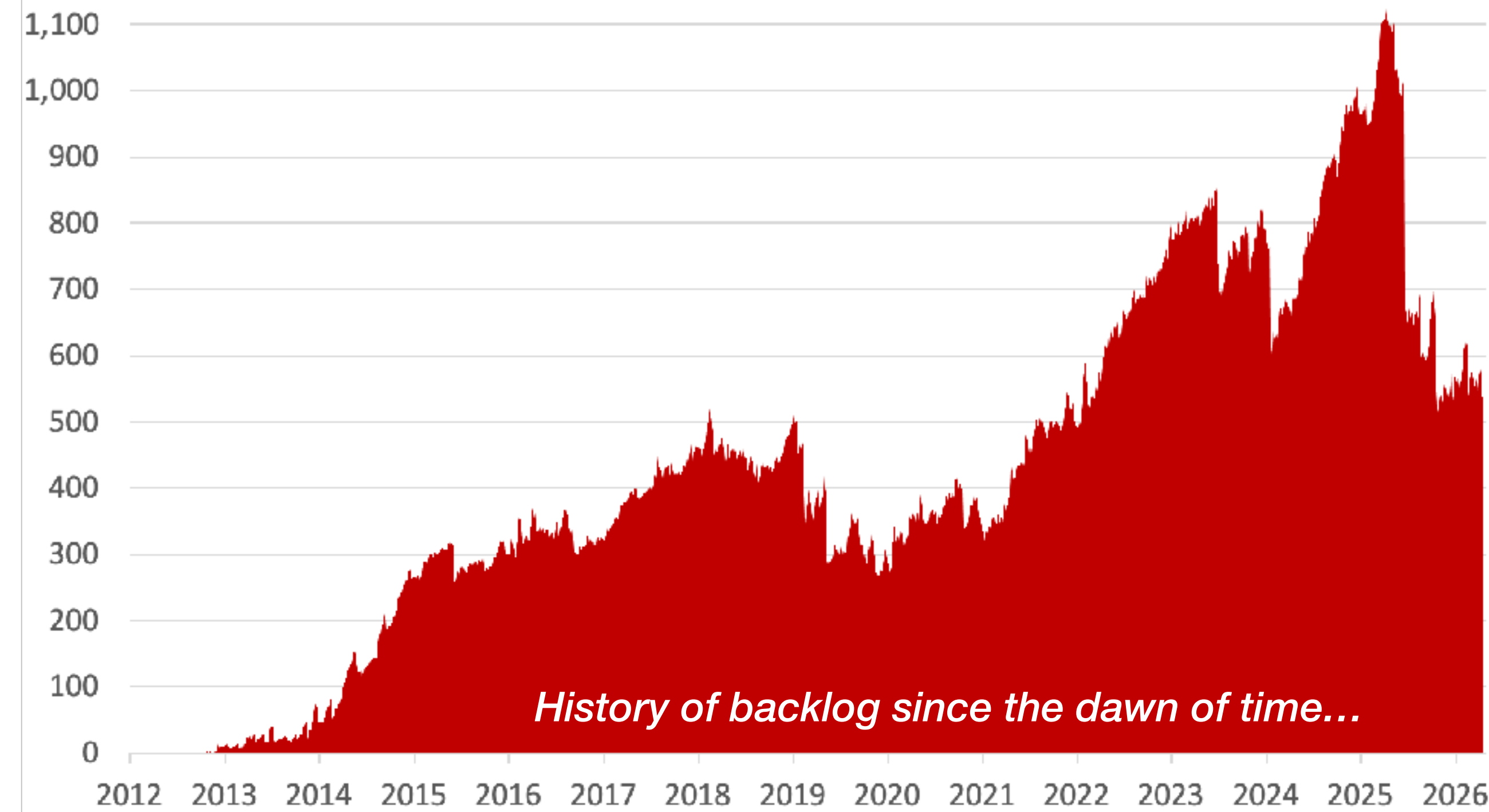


- Majority of easyconfig PRs merged by maintainers other than boegel (>75% since 2021, ~83% in 2025)
- Major cleanup done in open PRs; still open: ~5% of PRs opened in 2024, ~8% of PRs opened in 2025
- Ratio of manual PRs (not created using `--new-pr`) is slowly increasing (peak at 90% in 2022, now 80%)

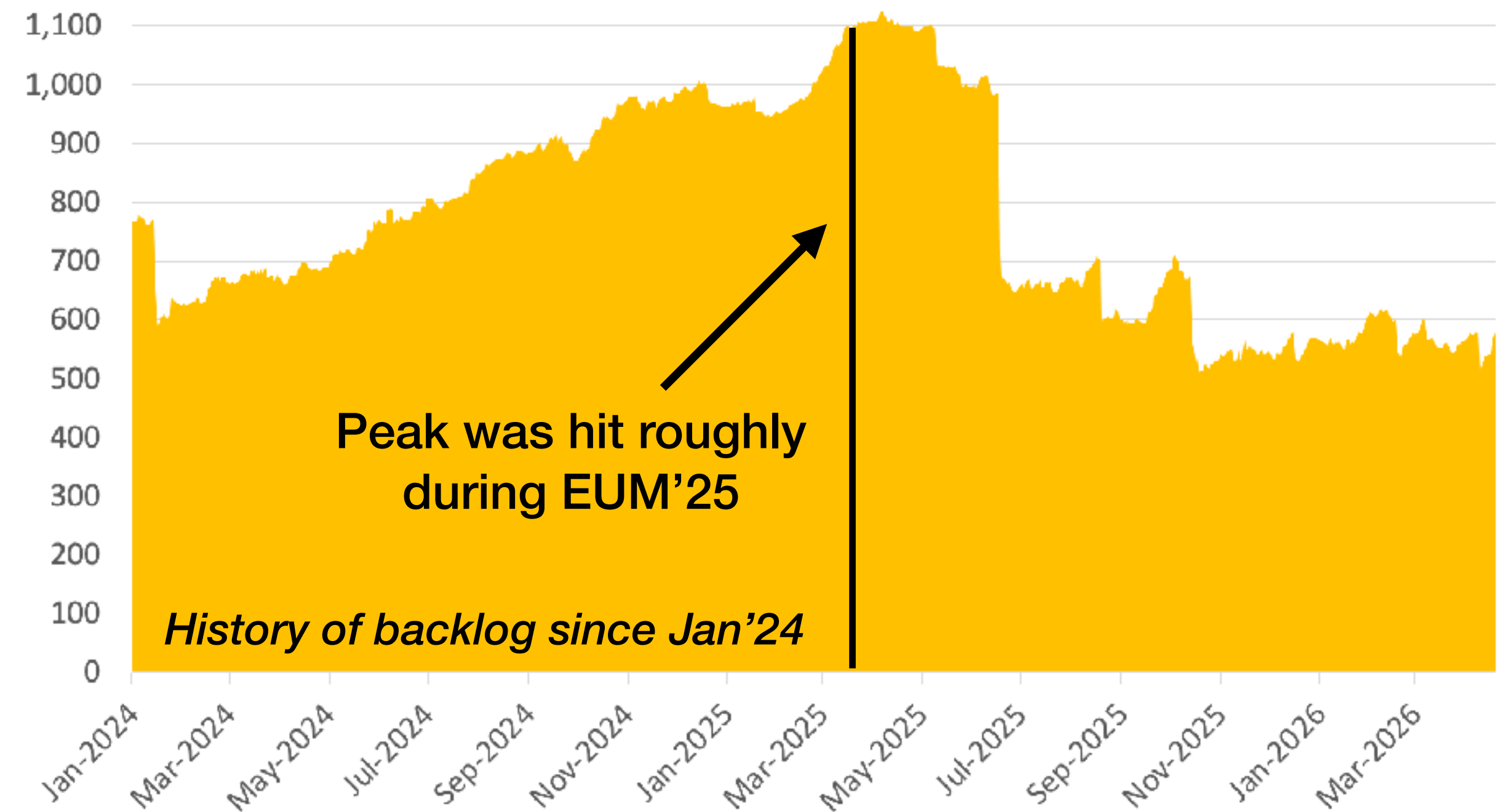
# Overview of contributions (open easyconfigs PRs)



# open easyconfig PRs (per day)

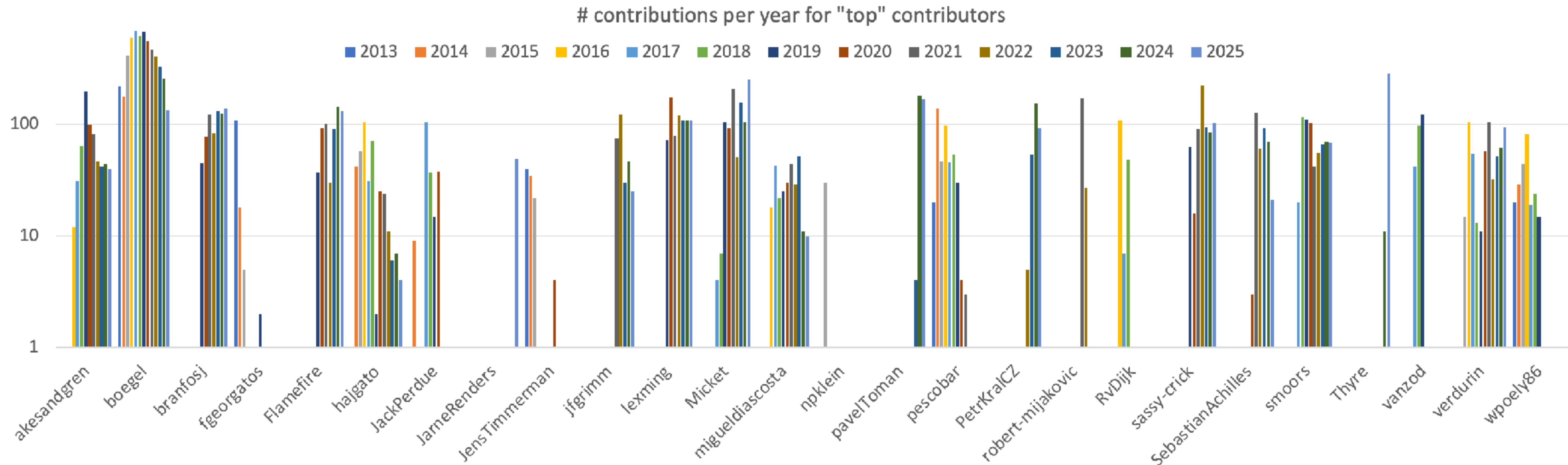


# open easyconfig PRs (per day, since 1 Jan 2024)



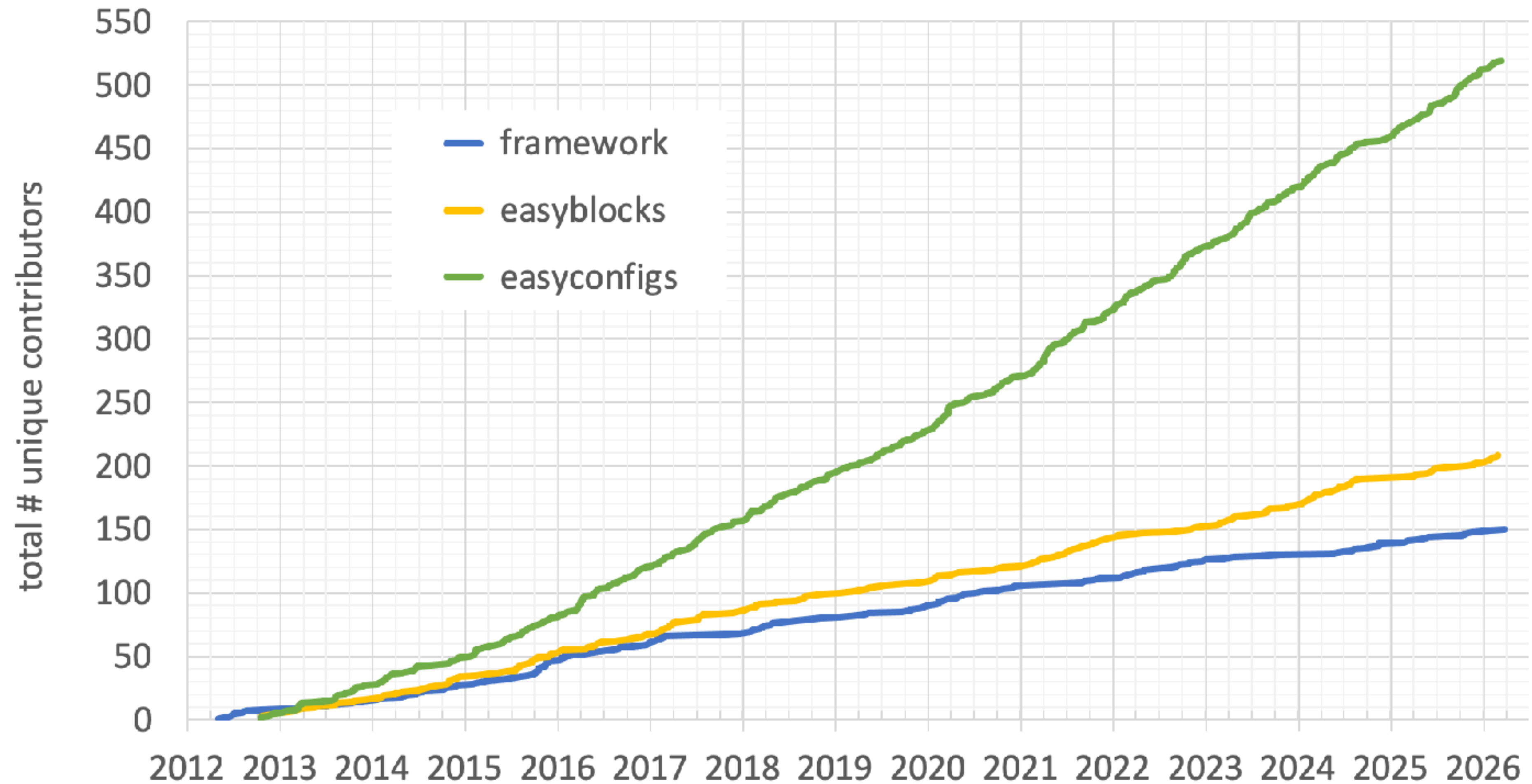
- We're starting to tackle the (massive) backlog of open easyconfigs PRs...
- Peak of over 1,100 open PRs has been conquered, now hovering between 500 and 600 open PRs since Nov'25
- Peak was partially caused by effort towards EasyBuild 5.0.0 release + high rate of incoming PRs (~13 per working day in 2025)
- Decline thanks to efforts of maintainers, easyconfig merge sprints, closing old/stale PRs (unsupported toolchains)

# Overview of top (easyconfig) contributors per year



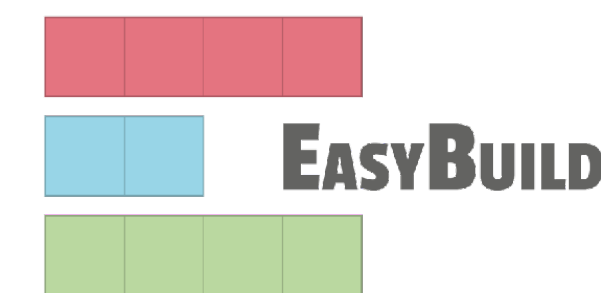
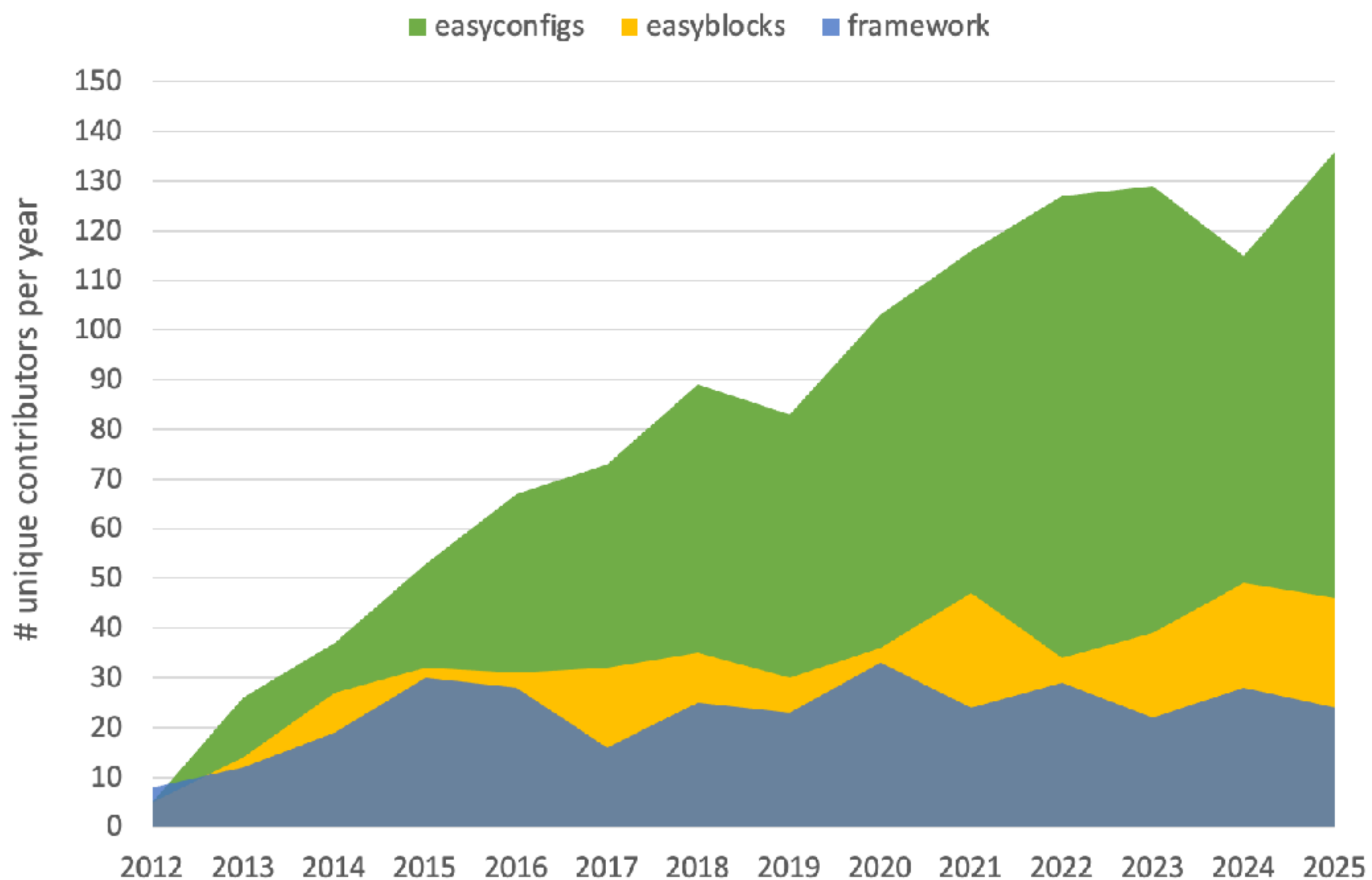
- Selection criterium: people who at some point were in top 5 per year in terms of # *opened* easyconfig PRs
- Goal: check if we can come up with a reasonable limit for # PRs per month, to counter potential “PR storms” that may be created with the help of AI tooling... => 25-50 PRs/month
- Observation: only 2 people have opened > 1k easyconfig PRs in total: @boegel (~5.6k) and @Micket (~1.05k)

# Overview of contributors



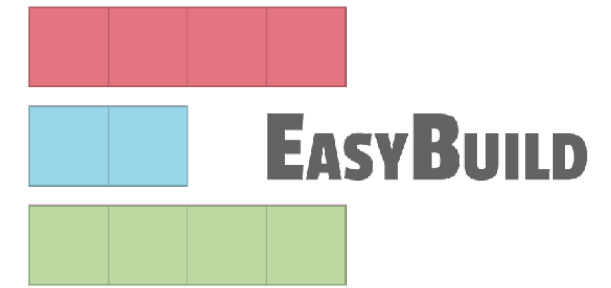
- 53 new contributors to easyconfigs repo in 2025, 13 for easyblocks, 9 for framework
- **Milestones reached in each repo:** 500+ contributors in easyconfigs, 200+ in easyblocks, 150+ in framework

# Overview of contributors (per year)



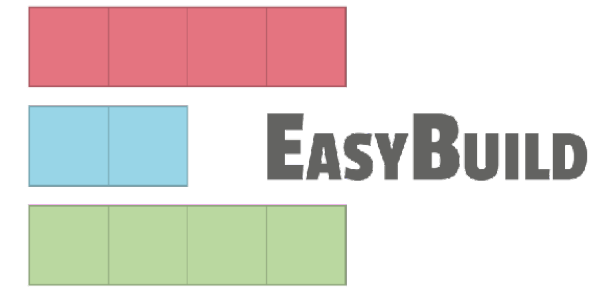
- In 2025: 24 unique contributors to EasyBuild framework, 46 to easyblocks (roughly status quo)
- 140 unique contributors for easyconfigs in 2025, highest ever (previous high was 129 in 2023)
- Reduced backlog of open easyconfig PRs has encouraged contributors again?

# EasyBuild tutorial



- **We are way overdue for another EasyBuild tutorial** (in-depth, free, online)
- Most recent was 1.5h intro to EasyBuild during EESSI webinar series in May 2025
- Last proper tutorial was in wake of EUM'23 (April 2023), 2 days (incl. EESSI)  
<https://tutorial.easybuild.io/2023-eb-eessi-uk-workshop>
- Maybe we can organise a webinar series in June 2026 (pre-ISC) with 3-4 short (~1h) sessions covering different topics (installation + configuration + basic usage, beyond the basics, ...)
- **If you would like to help out with organizing and/or presenting, please let me know**

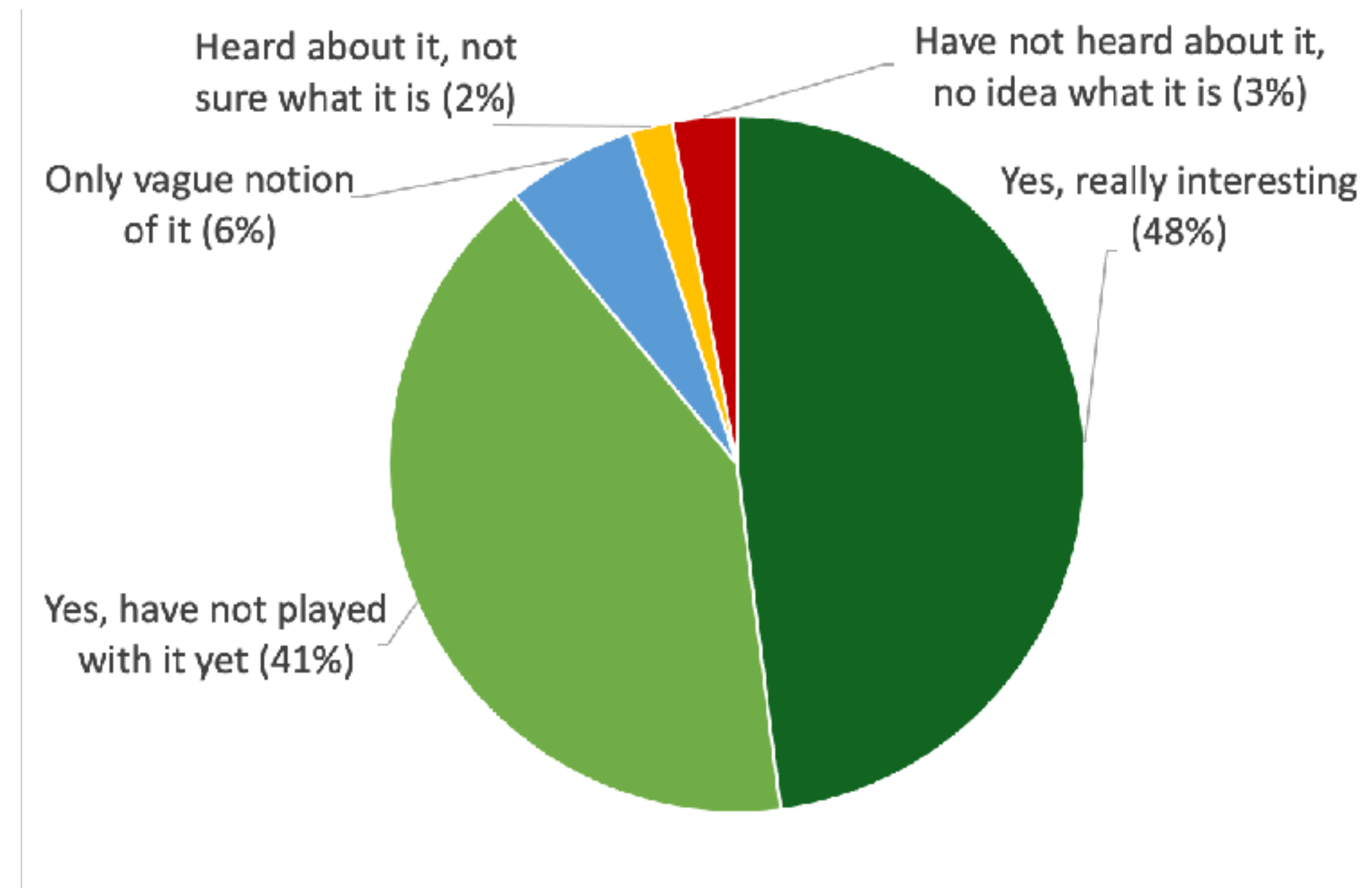
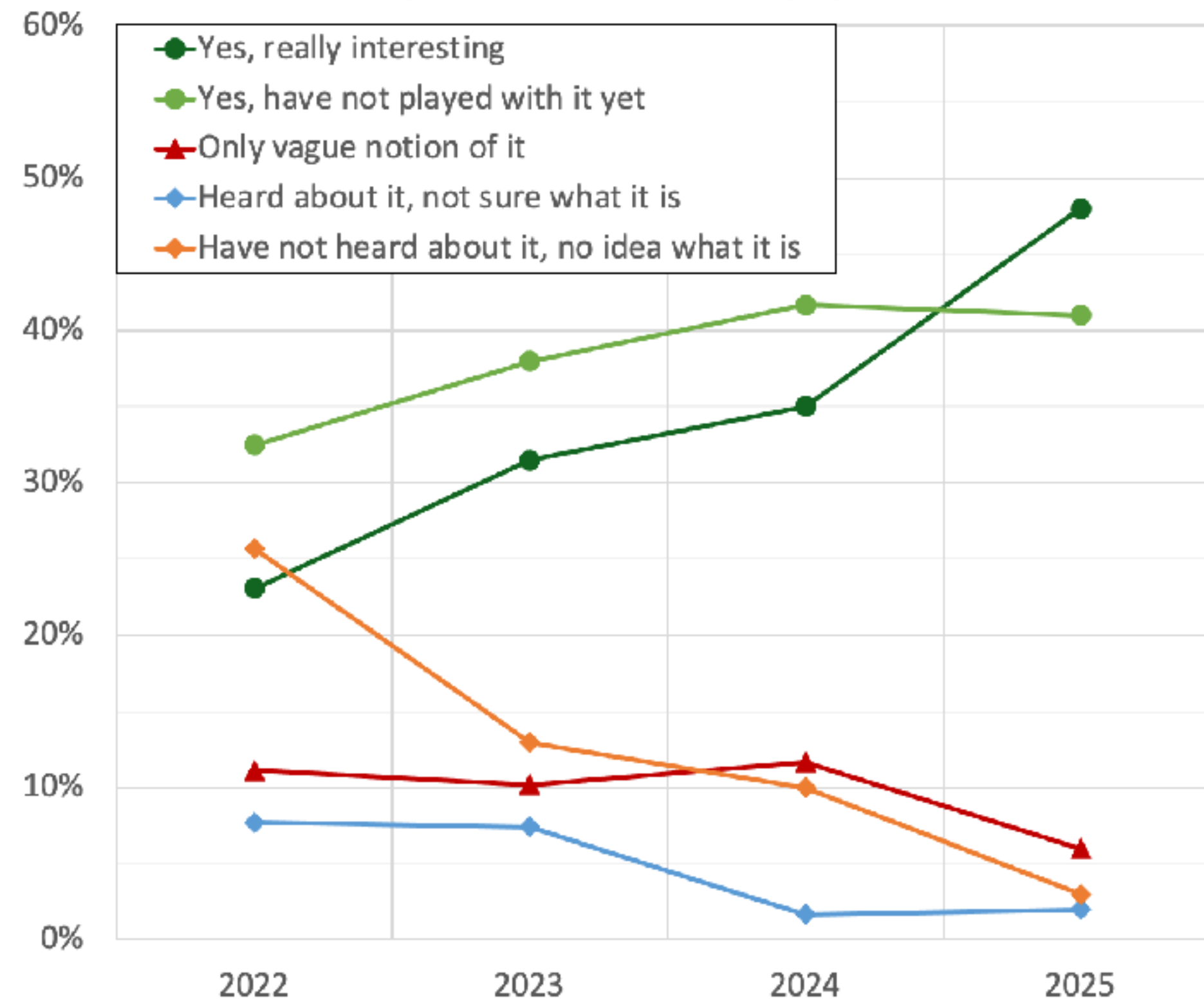
# EasyBuild blog



- Kickstarted after previous EasyBuild User Meeting (March 2025): <https://blog.easybuild.io>
- Only 3 blog posts so far...
  - <https://blog.easybuild.io/2025/03/28/eum25>
  - <https://blog.easybuild.io/2025/05/27/easybuild-5.1.0>
  - <https://blog.easybuild.io/2025/08/13/interactive-shell>
- Not ready to give up on it yet!
- Ideally we would have ~1 blog post per month
- **Who is interested in helping out with writing up blog posts?**

# Have you heard about the EESSI project?

European Environment for Scientific Software Installations (EESSI) - <https://eessi.io>



Vast majority of EasyBuild community is aware of EESSI (89%)

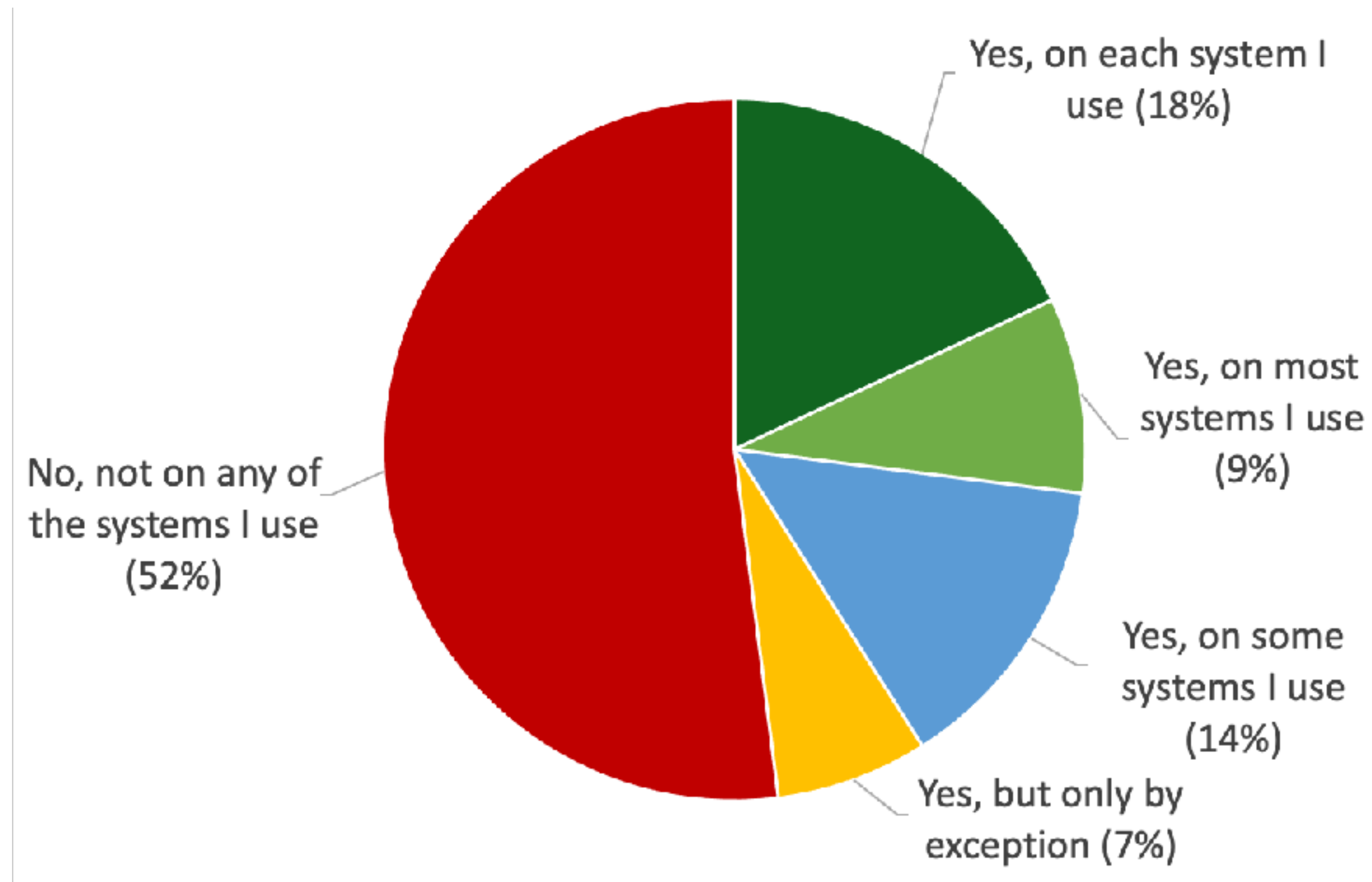
Steady increase in people who have hands-on experience with EESSI (31% → 35% → 48%)

Significant involvement of EasyBuild community, but does not replace EasyBuild!

**More (updates) on EESSI on day 3 of EUM'26**

# Adoption of EESSI

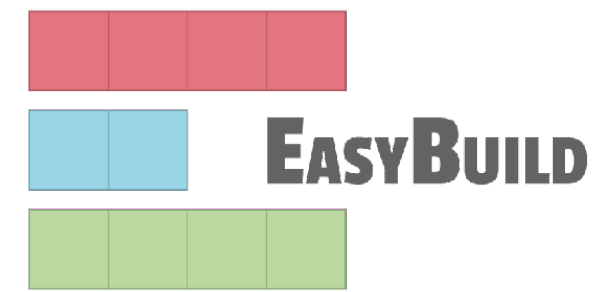
Is EESSI available on the HPC systems you use? *(new question)*



Less than 50% indicates that EESSI is available on systems they use

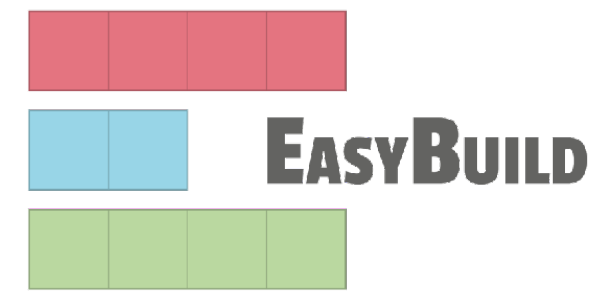
There is still a lot of untapped potential for EESSI w.r.t. adoption!

# Impact of EESSI & EuroHPC Federation Platform



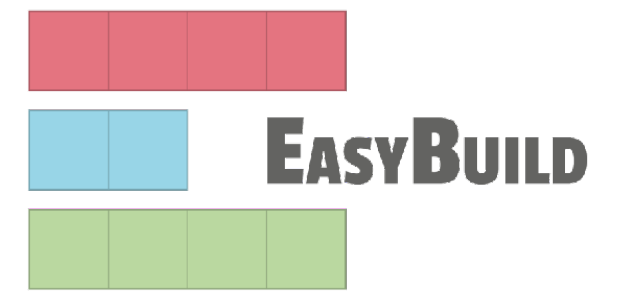
- EESSI project has indirect effects on EasyBuild, both positive and “negative”
- Increase in effort, but for very specific use case & context
- Has lead to additional end users, contributions, contributors, and maintainers
- Integration of EESSI in EuroHPC Federation Platform strengthens this impact further
- Close to 30,000 software installations are available on each system on which EESSI is available, **all of which were built with EasyBuild**, so everyone who has contributed to EasyBuild has a part in this
- Without EasyBuild and its community, EESSI would simply not have been possible!
- More on this in the EUM’26 talks on Thursday...

# EasyBuild Governance

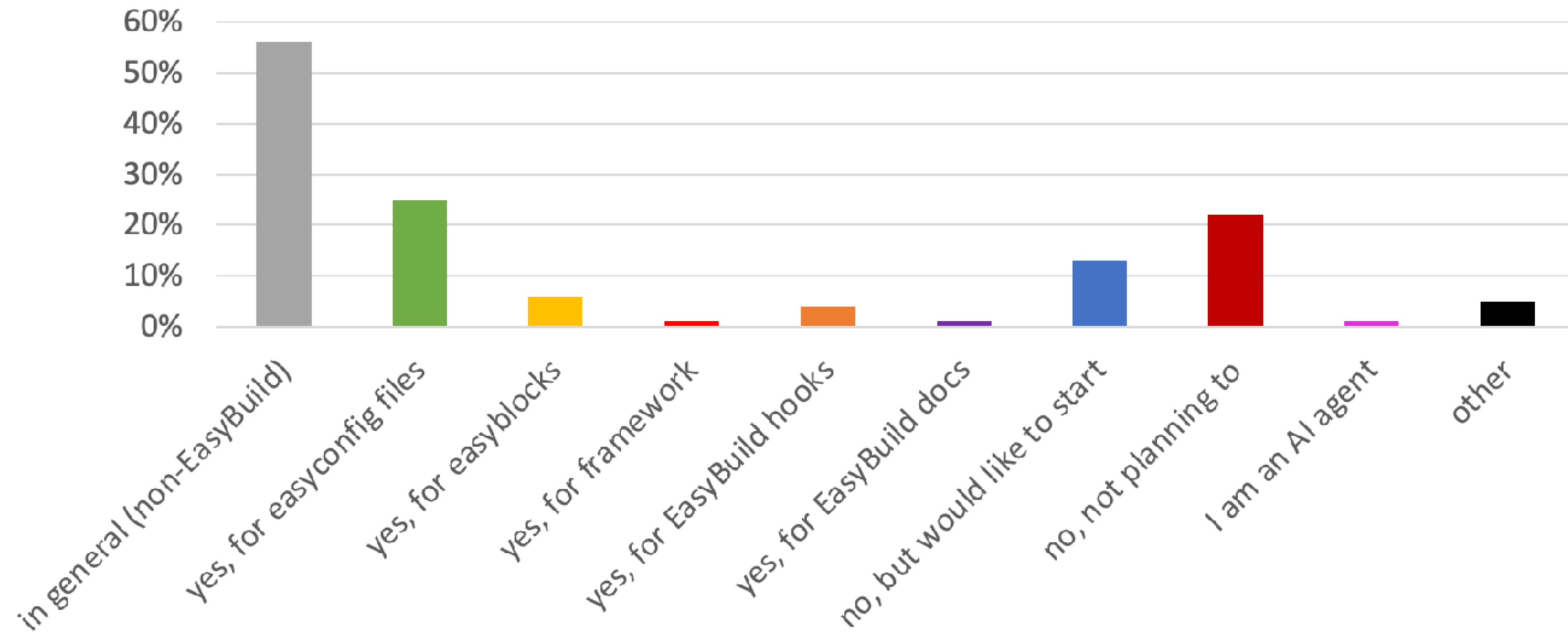


- Initial Steering Committee for EasyBuild was formed in March 2025, see also [docs.easybuild.io/governance](https://docs.easybuild.io/governance)
- Current composition: Kenneth Hoste (UGent), Caspar van Leeuwen (SURF), Adam Huffman (Univ. of Oxford),  
Simon Branford (UBirmingham), Sam Moors (VUB), Sebastian Achilles (JSC)
- Main goals:
  - Move from BDFL-style governance to proper community governance (inspired by HPSF)
  - Work towards non-initial Steering Committee which can set direction for EasyBuild going forward
- Initial concrete result: EasyBuild AI Policy @ [docs.easybuild.io/policies/ai](https://docs.easybuild.io/policies/ai)
- **Draft PR for EasyBuild governance, open for feedback: [docs PR #374](#)**
- More on this in Adam's talk dedicated to EasyBuild Governance...

# Use of AI tools



Are you using AI tooling (like LLMs)? *(new question, multiple answers possible)*



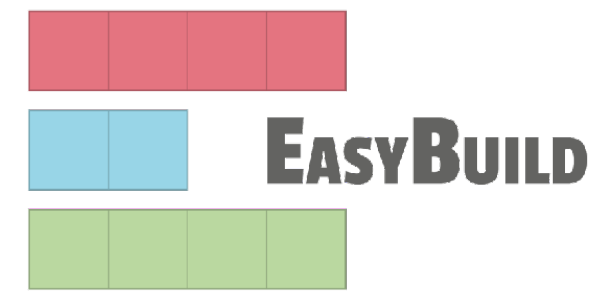
56% currently uses AI tools for non-EasyBuild tasks

**25% already use it for EasyBuild-related tasks**, mostly for easyconfigs

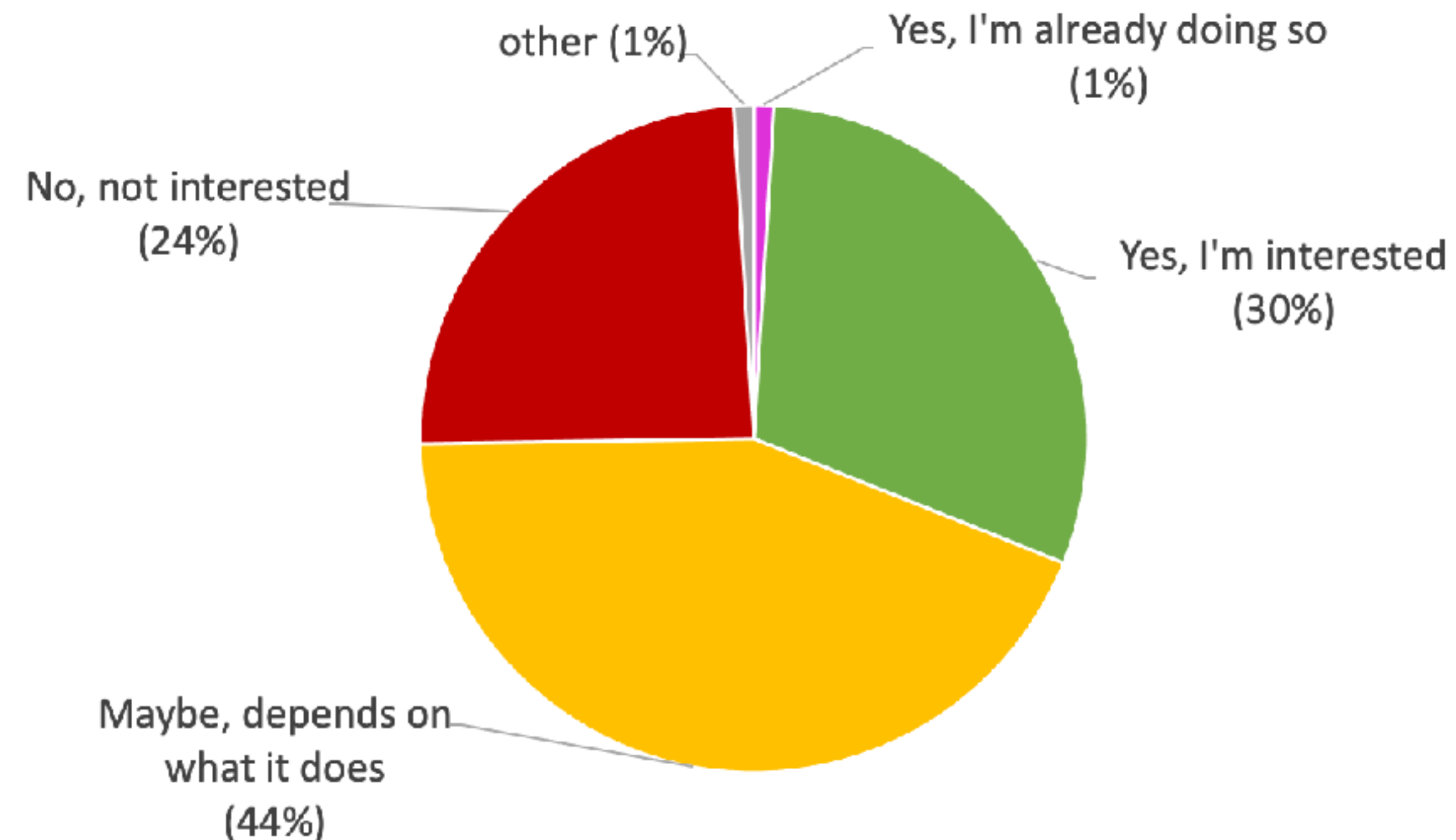
Less than 5% uses it for coding tasks related to EasyBuild (easyblocks, framework, hooks)

13% is not using AI tools yet but would like to, 22% not planning to

# LLM-based EasyBuild features



Are you interested in features that integrate LLMs with EasyBuild? *(new question)*

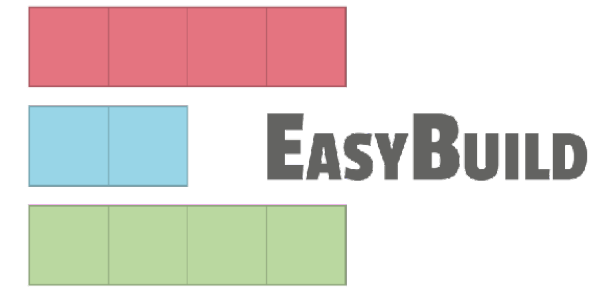


There is some interest in LLM-based features, a significant part is reluctant

<https://github.com/boegel/easybuild-llm> is a (basic) proof-of-concept

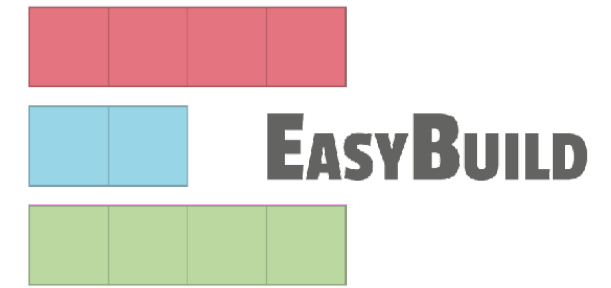
The new [EasyBuild AI policy](#) ensures that AI features will be opt-in (not forced on everyone)

# LLMs: threat or opportunity (or both)?



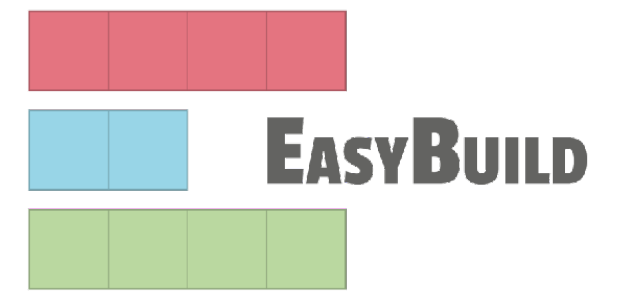
- We are starting to see real impact of LLMs on EasyBuild
  - Contributions (co-)authored or reviewed by LLMs, like GitHub Copilot, Claude Code, ...
- LLMs are (very) quickly becoming more capable (cfr. security bug reports to cURL )
- Leads to increased concern, for example about potential malicious contributions
- We will need to deal with LLMs in one way or another, whether we like it or not...
- EasyBuild AI Policy is a step in the right direction to start dealing with this, but only a *first* step...
- Group discussion on LLMs scheduled for Wed morning at EUM'26...

# Early outlook to EasyBuild 6.0

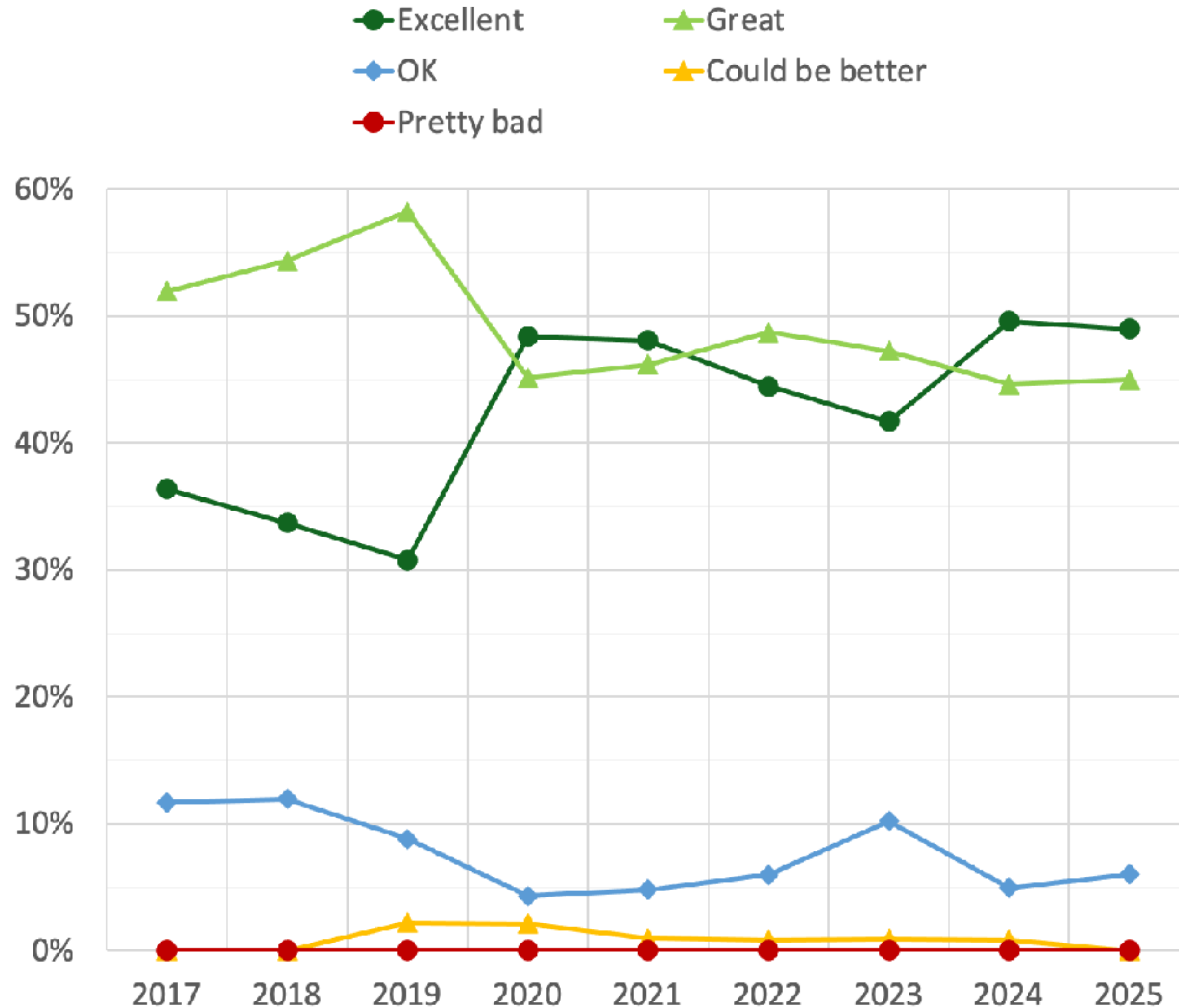


- **ETA: spring 2027** (~2 years after last major EasyBuild release, 5.0 in March'25)
- Plans:
  - **Drop support for Python < 3.9** + deprecate support for Python < 3.12
  - **Consistent naming scheme** for easyconfig parameters, configuration options, ...
  - **Modern eb command line interface** based on Click or Typer
  - + Various other more minor enhancements, changes, fixes, ...
- We'll probably set up a working group to organize some focused effort towards EasyBuild 6.0
- More on this in last EUM'26 talk on Thursday...

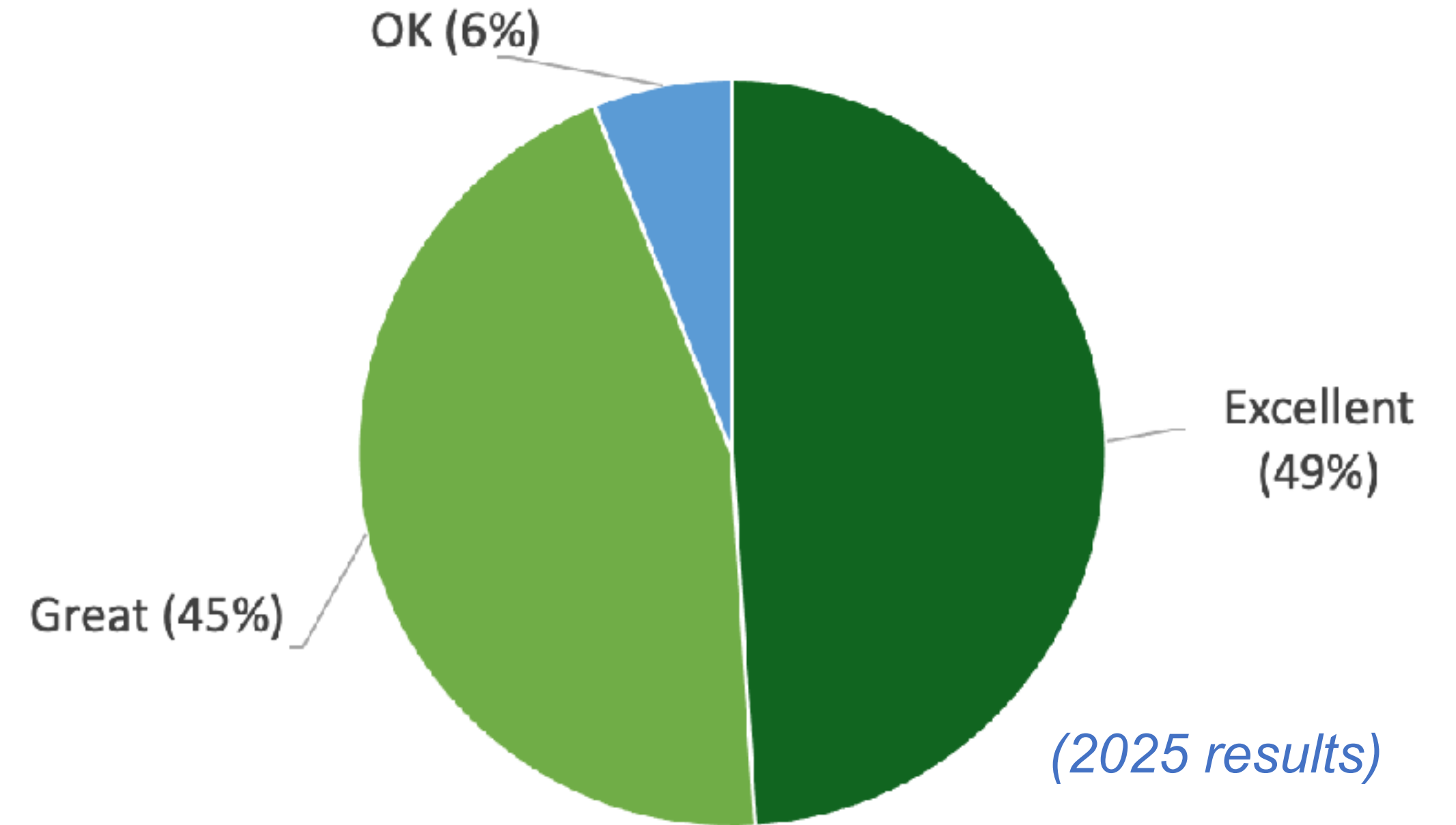
# Overall quality of EasyBuild



How would you rate the overall quality of EasyBuild?

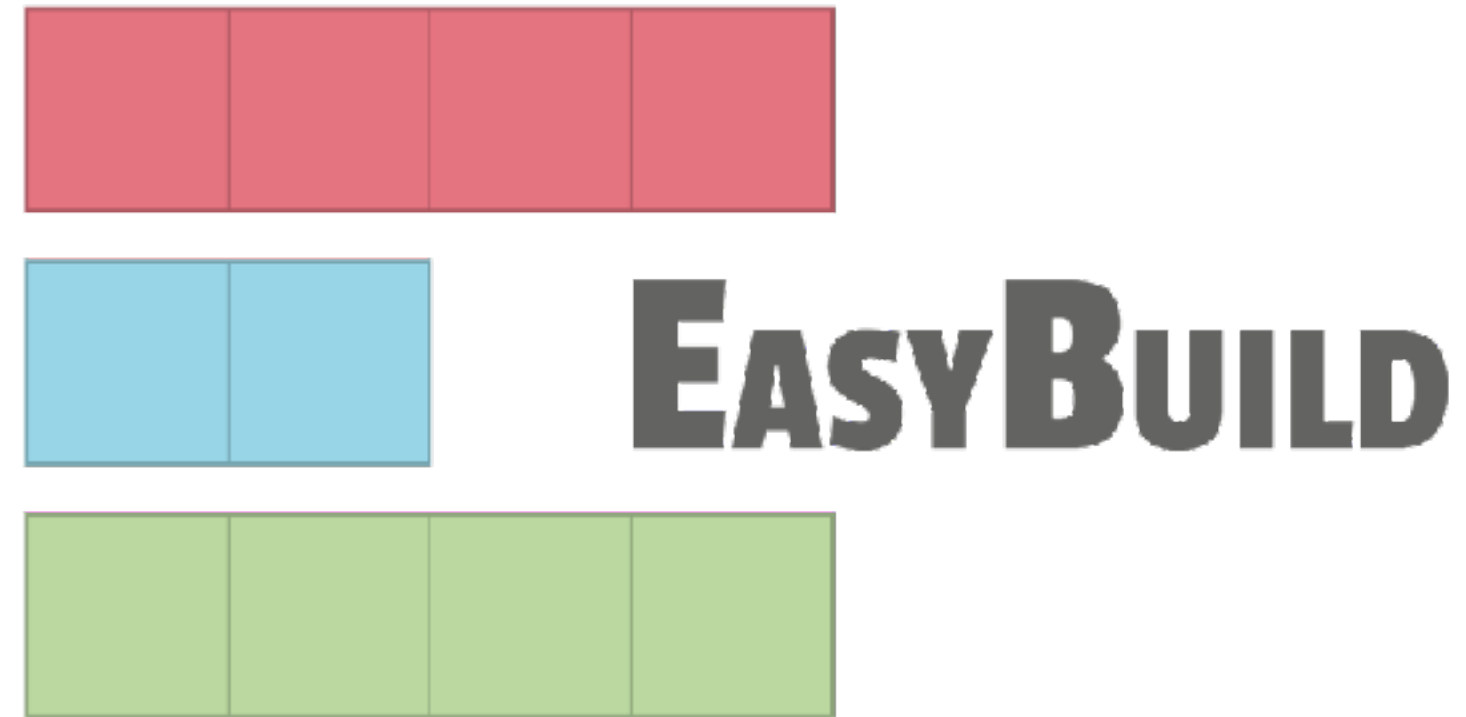


How would you rate the overall quality of EasyBuild?



Very positive evaluation of overall quality EasyBuild is very stable over the years

*(nobody ever answered "pretty bad")*



# State of the union

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11th EasyBuild User Meeting

*21 April 2026 - Guimarães (Portugal)*

*<https://easybuild.io/eum26>*

# Questions?